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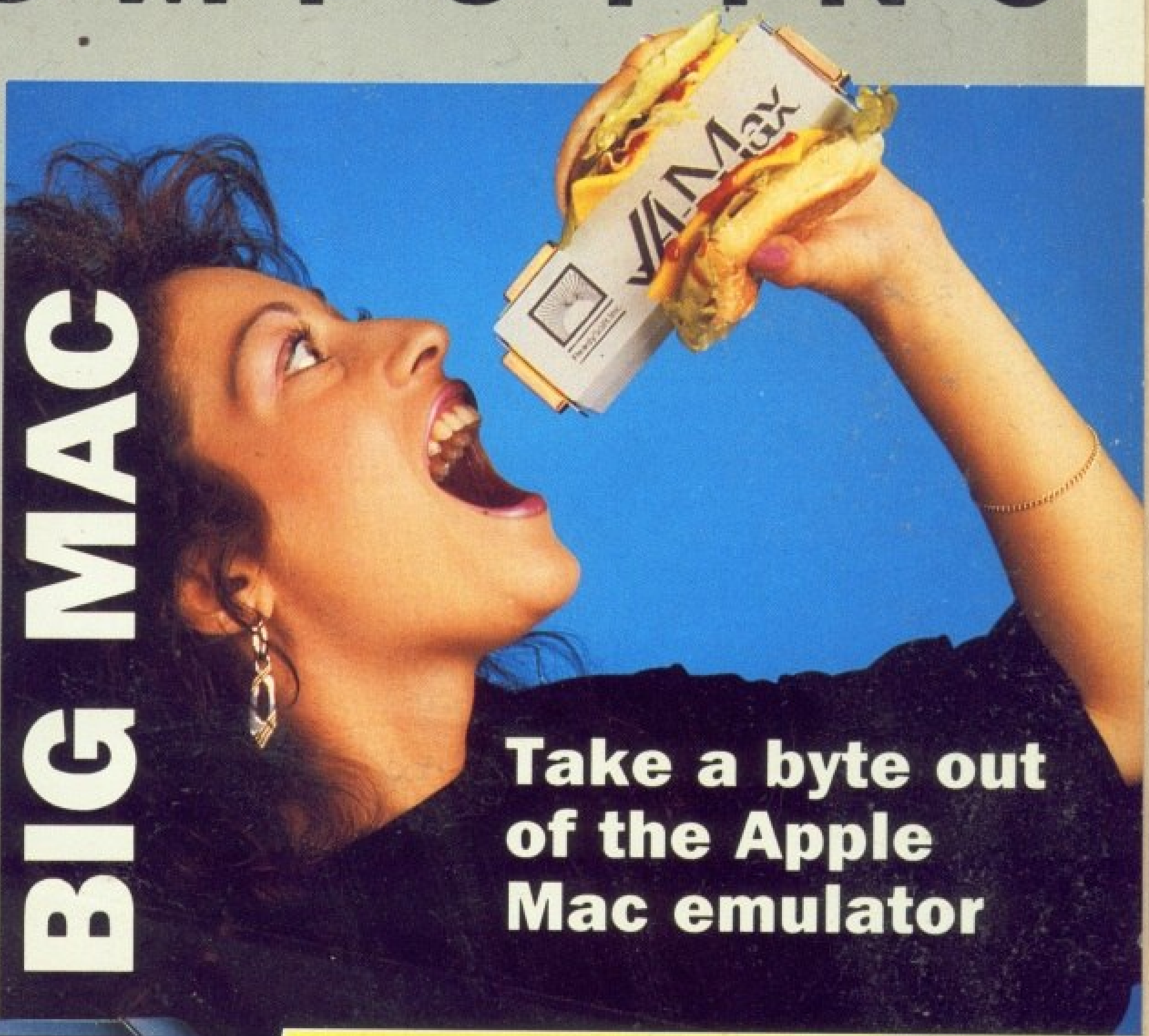
AMIGA COMPUTING



FOFT Gremlin steals Elite's crown



BOND Domark has a licence to thrill



BIG MAC

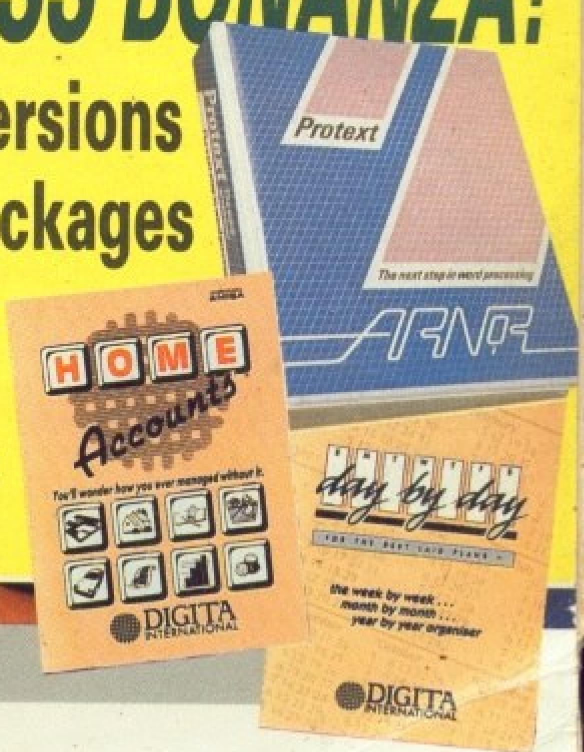
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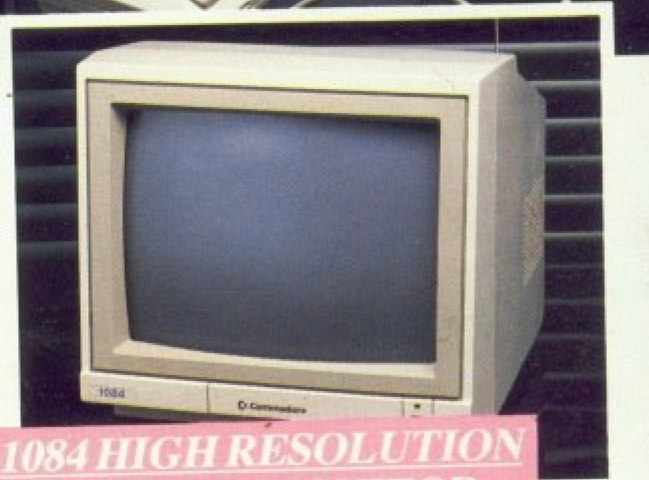
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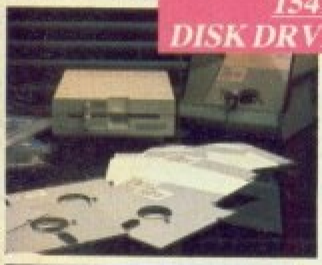
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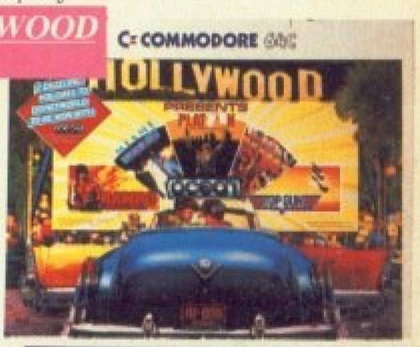
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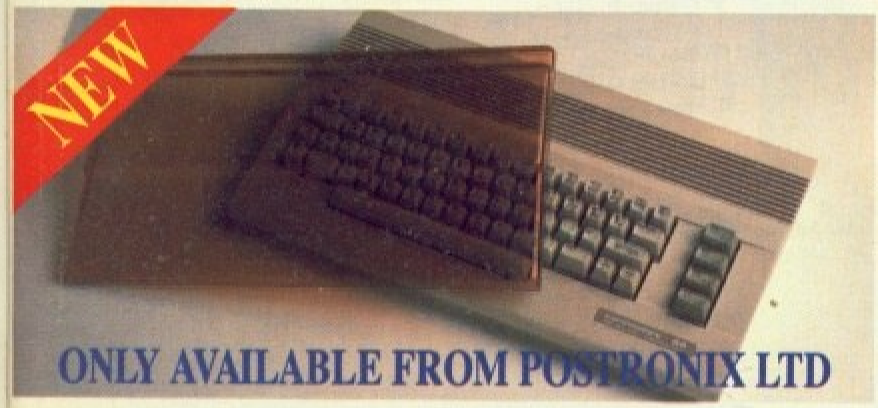
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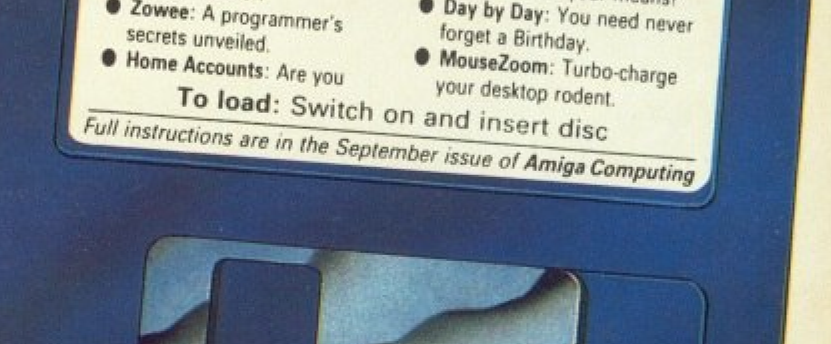
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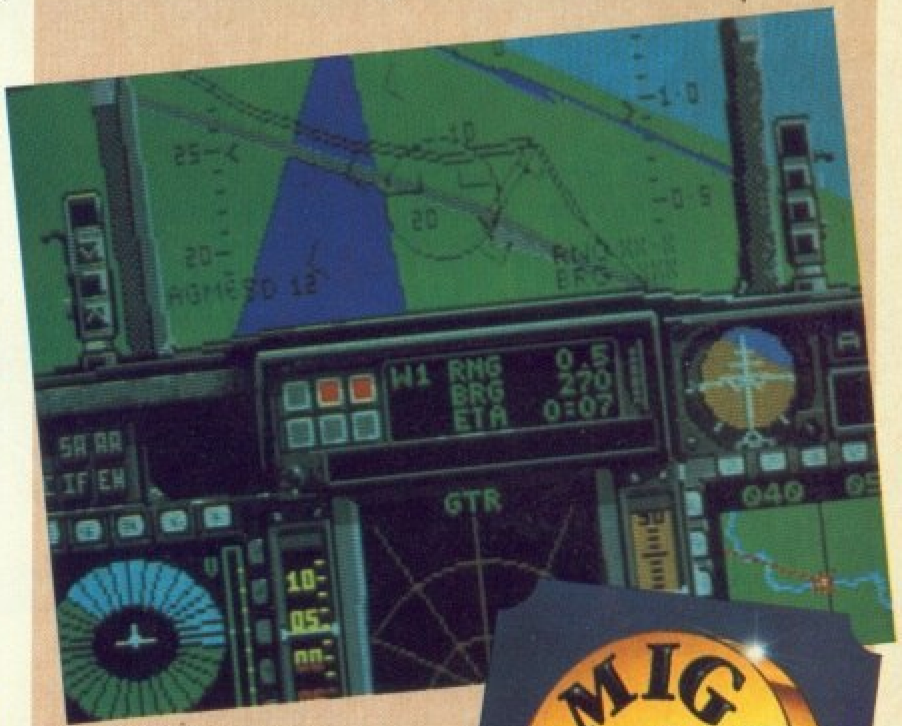
Epson's 24 pin beauty Page 70



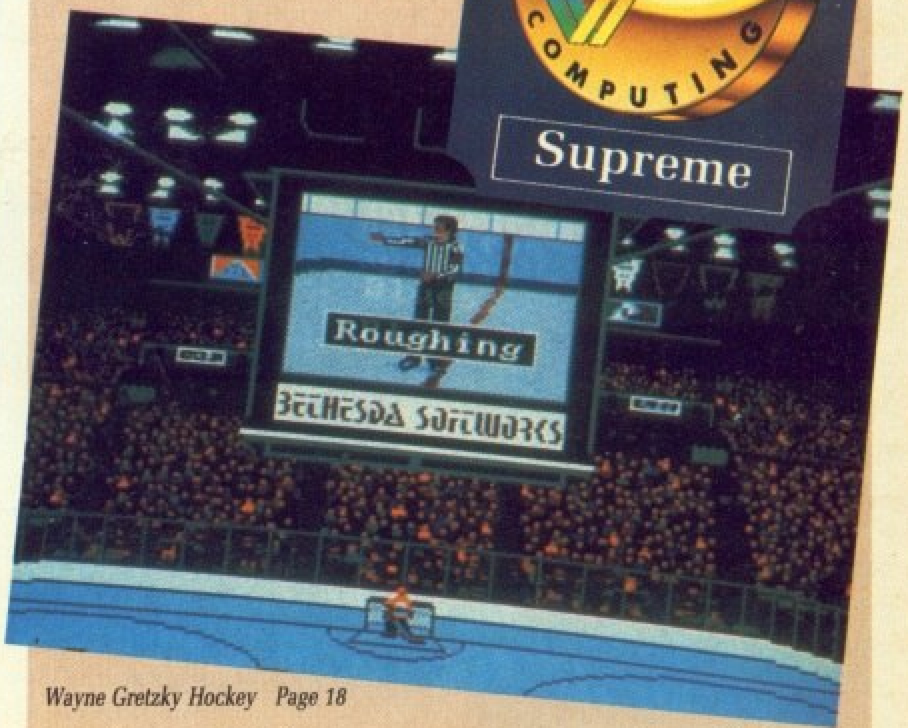


The fastest drive in town Page 78

GAMES REVIEWS



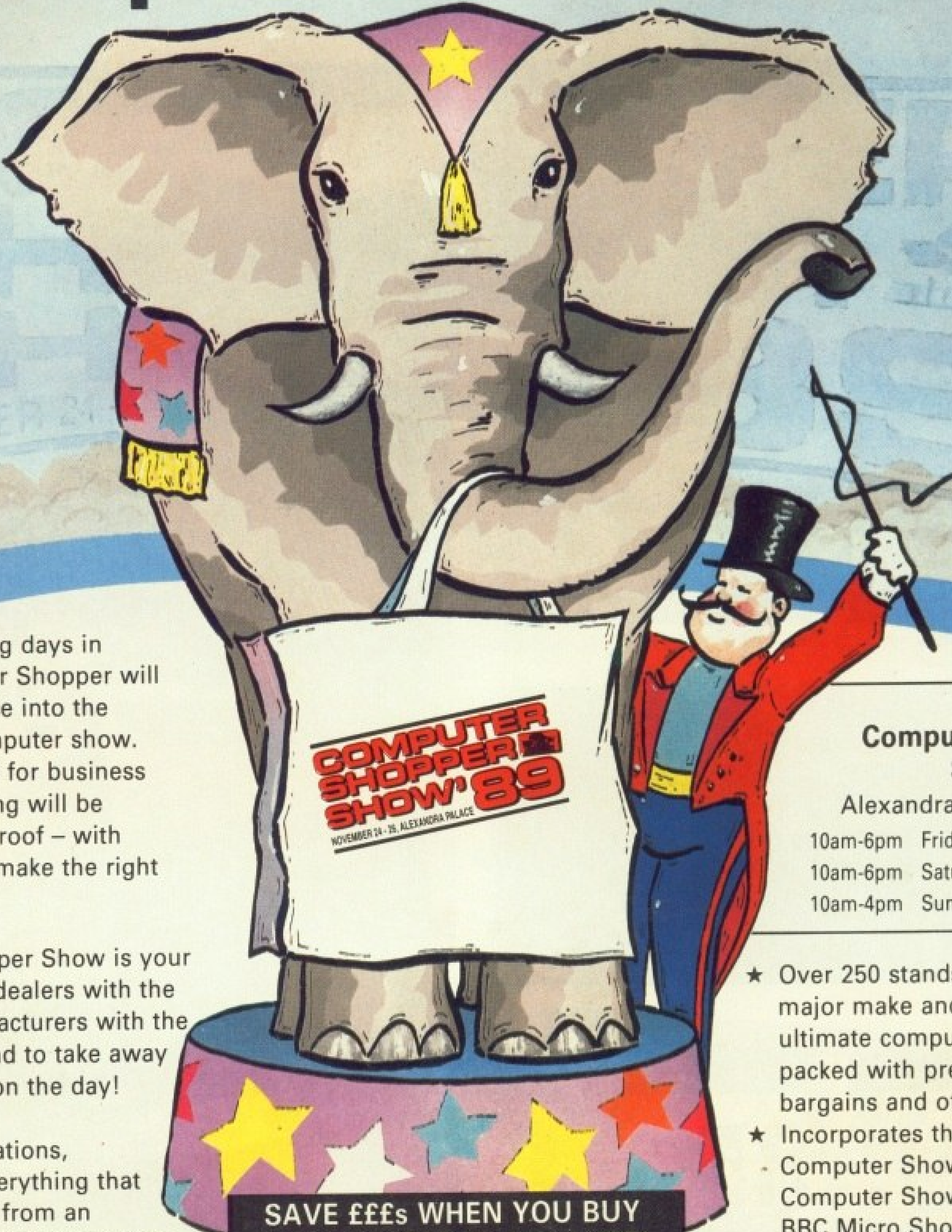
F16 Combat Pilot Page 16



Wayne Gretzky Hockey Page 18

Plus

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AMIGA SCENE

Commodore marketing being restructured

COMMODORE has appointed a trio of top-flight marketeers in a bid to reclaim the company's UK number one spot. The new people are Jeff Earl, formerly with Toshiba, Jenifer Perry, who came from Amstrad US and Jeff Clifford a high tech consultant. The increase in marketing strength is helped by the promotion of several people within Commodore.

The push will be on all fronts with both the PC and Amiga split into home and business markets. Commodore is already the second biggest PC company in Europe and the aim is to reflect this success in the UK.

The Amiga developer support programme is also being strengthened by setting up a Europe-wide electronic mail system. Each country will have a local telephone number. The messages will be collected and sent through Commodore's internal electronic mail to Commodore Amiga Technical Support (CATS) in the US.

To bolster the UK side of Commodore's support the company is looking for people with PC, Amiga or Unix expertise. If you are interested in working for Commodore and being among the first people to get your hands on future products contact Dr Rahman Haleem at Commodore UK on 0628 770088.

Fantasies into fact

AMIGA owners who crave the satisfaction of putting their own fantasies into a workable game will welcome the latest offering from Microdeal (0726 68020).

Following its success on the Atari ST, interactive program generator Talespin has now been adapted for the Amiga.

Talespin allows picture files created with most proprietory painting packages to be used time and time again in an interactive environment. A character can be created and then appear in a number of different guises.

The artwork scenarios can be linked with text boxes and digitised sound supplied by Microdeal's own Amas digitiser. The result is interactive role play which can be used in both games or educational environments.

"We think our main sales will be from people who want to write their own adventures", said Microdeal's John Symes. "Talespin can also be adapted for creating educational software, instruction material and in demonstration work".

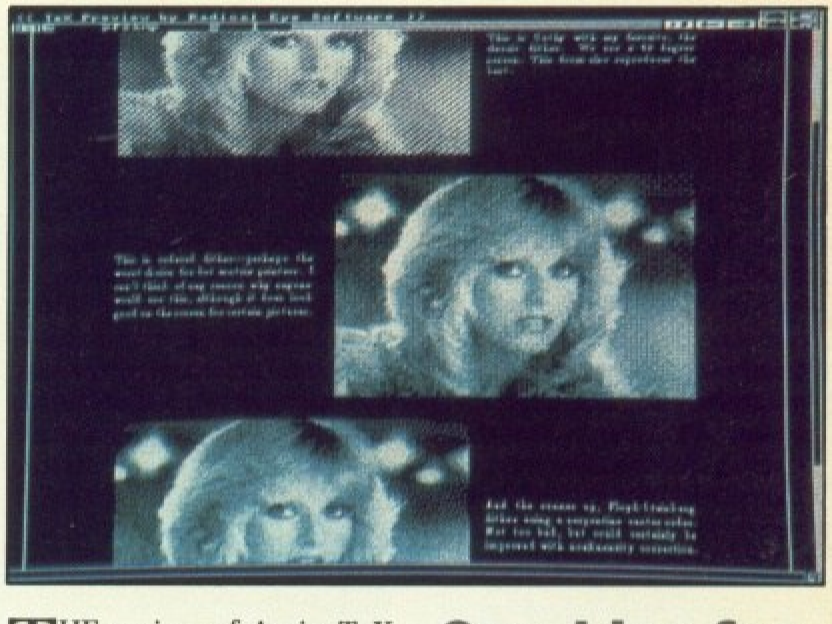
Apart from the inclusion of text, Talespin is mouse orientated and included in the package is a disc to allow created programs to be passed on under public domain.

The program needs 1Mb of memory and will import artwork from most painting packages. It costs £29.95.

Concept for the Amiga?

THERE are plans to develop a Concept keyboard for the Amiga. Discussions have been taking place between Commodore and Star Microterminals (0962 843322) and it has been established that a Concept keyboard is a workable idea for the Amiga.

Plans now await development of the necessary Amiga software to run such a keyboard, said Trevor Nice, educational manager for Star.



Graphics for AmigaTeX

THE review of AmigaTeX in the November 1988 issue of *Amiga Computing* generated a lot of interest in the product, so much so that Radical Eye Software has now appointed a UK distributor for it's products. All orders and support are now being handled by The Text Formatting Company (01 806 1944).

A new version of AmigaTeX is imminent. Apart from a few minor bug fixes and a completely re-written manual, the major change of this release is the ability to include IFF graphics within a document.

The amount of control AmigaTeX gives over how the images will be printed is astonishing. If you thought Workbench 1.3 offered nice graphics support "you ain't seen nothing yet!.

Not only is it possible to select the method used for dithering, but you can also adjust the degree of dither as well as many other parameters. All graphics functions can be previewed on screen before printing.

This release means that AmigaTeX now gives not only the best text output available from the Amiga, but also some of the best graphics output as well.

The good news for existing AmigaTeX owners is that update prices in the USA are a mere $10 for the program and $10 for the manual. Expect UK prices to be comparable.

Taking on the taxman

FILING your own tax return is cheaper than taking professional advice, but few people have the knowledge to be sure they are claiming all their due allowances.

Digita International (0395 270273) claims to have the answer to this problem with a new Amiga version of its Personal Tax Planner program.

Tax Planner has already been good news for at least one Digita customer. Having checked his tax affairs with an earlier version of the program, Mr D.S. Staples of Berkshire wrote to the company on June 24 this year thanking them for helping him obtain a rebate of £1,111. On July 8, he wrote again to tell Digita he had received a further rebate of £689. "What can I say but well done", said Mr Staples.

Tax Planner is a fully menu-driven program based on UK income tax. It asks users a series of questions similar to those on a tax return form. Once details are typed in, it computes the tax which should be due. There is also a "what if" facility which will calculate the tax liability for changed income and circumstances or changed alowances.

Personal Tax Planner costs £39.95.



SuperBack drives ahead

ONE of the major limitations of the original SuperBack was that it could only use df0: as the backup device. SuperBack II can now make use of as many floppy drives as you have attached to your Amiga.

This is important firstly because it makes the backup process even quicker, and secondly it is still possible to perform backups even if your internal drive is not functioning.

Other improvements with SuperBack II are the ability to specify the amount of memory used for buffering so that more memory gives a faster backup but hampers multi-tasking, more security in the way the backups are stored – there is now no chance of getting two sets of backup discs muddled – Scandinavian language support, plus various other niceties.

It would appear that this new version is purely a functional improvement – there were no bugs to be fixed in the previous version.

Xerox to Commodore

THE former vice-president of the Xerox Corporation, Brian C. Weyman, has been appointed vice-president of worldwide manufacturing and purchasing – a new position in the corporate structure of Commodore International.

Mr Weyman (46) joins Commodore after 28 years with Xerox.

"The recruitment of a senior manufacturing executive with Mr Weyman's experience is an important element in our overall plan to gain efficiencies in purchasing, production and distribution", said Irving Gould, chairman and chief executive officer of Commodore International.

MicroLink expands

FOLLOWING last month's decision to switch the MicroLink electronic mail service from Telecom Gold to Istel, it has been revealed that the 10,000 subscribers will soon have access to the widest range of electronic mail services in Britain.

New plans include easy access to more than 1,000 global databases, international teleconferencing and teleshopping. They also offer Istel's higher speed 2400 baud rate with MNP error correction as well as X-Modem, Y-Modem and kermit.

Subscribers will continue to be able to communicate with Telecom Gold and other international Dialcom systems and MicroLink chairman Derek Meakin has promised that the service will continue to undercut Telecom Gold prices.

Simpler digitising

VIDEON, a video digitiser for the Amiga has been launched by Power Computing (0234 273000). Simplicity of use is one of the main attributes of this direct digitiser which accepts images from any primary power source – TV, video recorder or video camera.

Videon uses full colour but is not a frame grabber. A still image is needed but with good algorithms, the end results are exceptionally good. Pictures can be digitised in all Amiga formats and in all resolutions.

In addition to the hardware, Videon includes digitising software plus extensive routines for special effects such as pixelisation, line art, multi-picture effects, solarisation, image zooming and dramatic 3D sweeps for wrapping images round solid objects. Videon costs £249 and can be teamed with Video Magic, Power's software for video presentations.

Power has also launched its new multi-drive, a 5.25 and 3.5in drive for the Amiga with twin track counter costing £249 and a new 48Mb hard disc for the Amiga at £499.

New deal for dealers

CONTINUING its push into the education market, Commodore (0628 770088) has launched its Education Dealer Initiative '89 aimed at recruiting new dealers and restructuring the present force.

Called EDI 89, the new moves have split Commodore's education dealerships into three bands.

Entry level are the registered dealers who will get regular mailings and support evenings with distributors.

Next up are the authorised dealers who will receive these benefits plus sales leads from distributors and visits from Commodore staff for major demonstrations and direct involvement in promotions to the education market.

Top of the pack are the principal dealers who receive the benefits given to other bands plus sales leads passed direct from Commodore, involvement in local education authority presentations and invitations to shows.

Tenders will be passed on to principal dealers and they will be able to compete with the Stationery Office on pricing of Commodore computers.

To qualify, registered dealers just have to return a registration form and authorised dealers must have demonstration and technical support facilities, stock holding areas and an education market turnover of £5,000 a month on Commodore products.

The principal education dealers must have all the attributes of authorised dealers but with sales of £20,000 a month.

Distributors will also be able to gain official authorisation if they show a sufficient knowledge of the market and are prepared to run promotions aimed at education.

"We now have a big enough presence in the education market to justify expanding our dealer base", said Commodore's distribution sales manager for the education division, Anton Bray.

"We shall be pumping a lot of marketing effort behind the dealers who come on board during Education Dealer Initiative '89. Commodore's ball is rolling, all we've got to do now is maximise that momentum".

CBM's managing director Steve Franklin said: "There has never been a better time for dealers to get involved with Commodore. The incentives are there for the right dealers – and there is more to come".



Email service wins award

WORDSTREAM, the electronic mail typesetting service offered on MicroLink, has won a major national ward for its creative and effective use of telecommunications.

The Dorset based company won the £500,000 to £1 million turnover award in the 1989 Business Phone Awards jointly sponsored by the Sunday Times and British Telecom.

Wordstream is the brainchild of David Furlonger. He supplies customers with communications software and a manual setting out the simple codes which are needed. They write and mark up the copy with type sizes, headlines and any other necessary instructions and send it via their own desktop computers into an electronic mailbox.

The mailboxes are automatically emptied at high speed, the copy is processed at Wordstream's offices in Poole and the repro bromides are ready within two hours. They are then sent by post or courier back to the customer.

"We have a very wide range of customers from publishers of foreign phrase books to political pressure groups to sexy magazines", said David Furlonger. "Recently, I discovered we were setting the labels for HP sauce bottles all round the world".

Since it was set up three years-ago, Wordstream has built up a strong base of 3,000 regular customers and a turnover of £600,000 a year.

Collecting his award in a ceremony at The Savoy in London, David Furlonger said: "Email adds the vital element of reliability to the transfer of informaton from user to processor. It has created the vehicle for Wordstream's success".

Share a monitor

THE Amiga and the Atari ST may be competitors but one British company has the best of both worlds. Trilogic (0274 691115) often receives requests for leads to enable two computers to share one monitor. The most popular combination is the Amiga and the ST.

Its new monitor sharer enables any two computers which have TV or monitor leads ending in a Scart plug to share one TV or monitor.

Commodore bonanza

COMMODORE UK has now thrown its support behind the Computer Shopper Show.

The growing list of exhibitors includes many household names in the Commodore market including Silica Shop, HiSoft, Equinox, Evesham, Megaland, Micro Anvika, Postronix, Trilogic and Tynesoft.

Up to 40,000 visitors are expected to turn up at The Great Hall, Alexandra Palace from November 24 to 26.

"The choice of Commodore products will never have been greater nor will the number of special show offers", said Michael Meakin, head of organisers Database Exhibitions. "It will be a bonanza for Commodore owners".

Time called for pirates

A SWINTON licensee took swift action when FAST, the Federation Against Software Theft, stepped in to tell him an illegal software copying den was being run in the back room of his pub. John Heaton of The Beehive Hotel, Swinton, evicted the pirates from his premises and vowed they would never return.

FAST was tipped off about the piracy meetings by a software dealer whose staff had discovered what was going on.

Members of Bolton and Swinton computer clubs were believed to be involved, but officials of the clubs have stressed that the undercover activities were entirely unofficial and in no way condoned by them.

"It was so blatant", said a spokesman for FAST. "They apparently moved into the pub, set up their machines and started copying. We are sure that copying has now ceased in the pub concerned, but you can never be certain that it has not moved somewhere else".

Now Amiga's on the ball

SHORTLY after becoming a Commodore dealer, Ladbroke Computing (0772 21474) is making its mark on the Amiga world. It has already developed its own range of Amiga expansion boards and has come up with what is thought to be the first trackball for the Amiga.

The boards, which slide under the Amiga come fitted with a switch which will knock out 0.5Mb of ram to accomodate software which does not need the full 1Mb.

A baseboard costs £17, the board with battery-backed clock £24.99, the board with ram installed £107.99 and a fully populated board with clock is £119.99.

The trackball specially designed by Ladbroke for the Amiga is now on sale at a price of £24.99.

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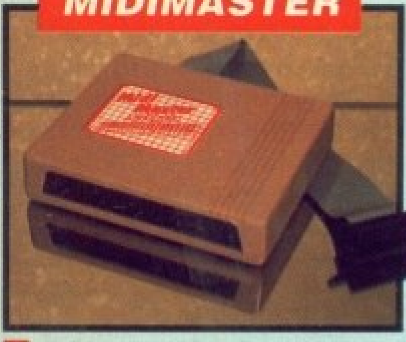
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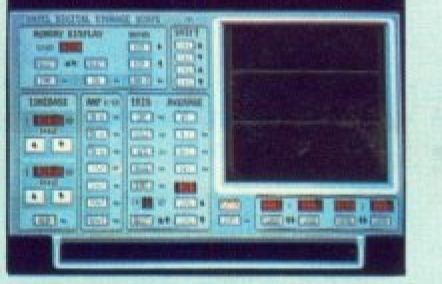
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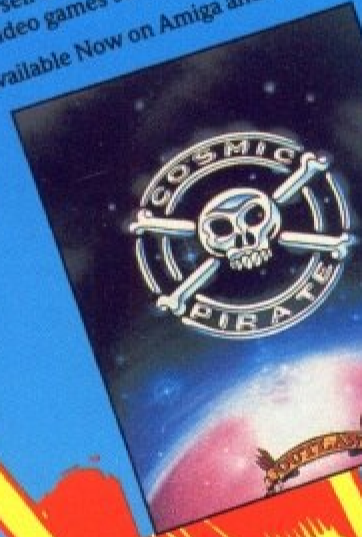
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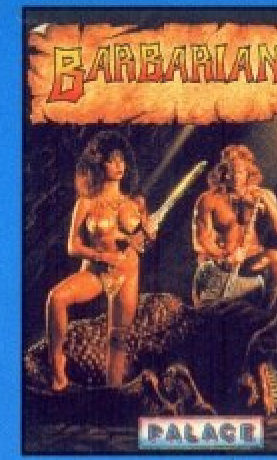
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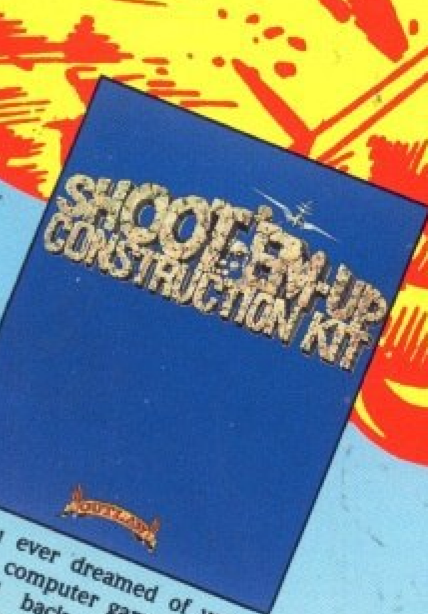
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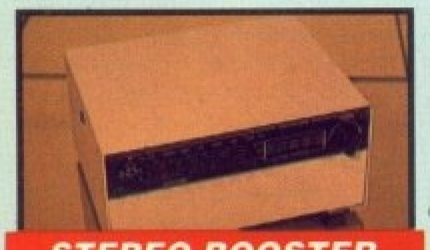
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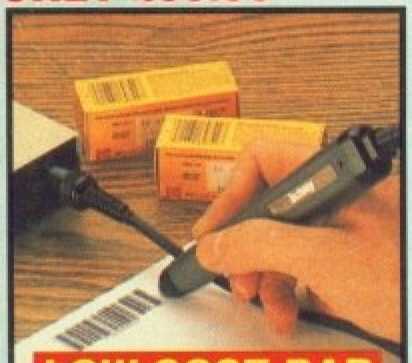
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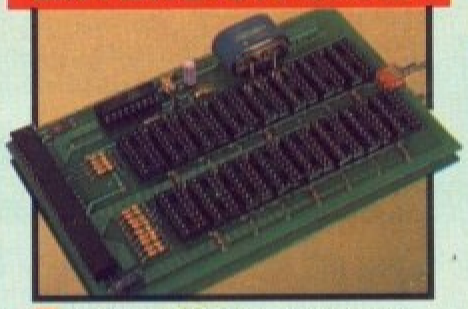
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Amiga Arcade

Cops on the run

SOME computer games are jinxed, dogged with problems from the moment they leave the designer's mind. Mars Cops from Arcana Software is one such game.

The idea for this space age arcade adventure was thought up by company boss Max Taylor, who promptly got stuck into writing it. Some months later, bogged down and tired out, he passed the coding over to a freelancer, who in turn gave up the project when he couldn't translate Max's ideas into executable code.

New boy Nick Tuckett took over and was doing an admirable job until without warning, just two weeks before the scheduled release date, he too walked out on the company. Reliable sources inform us that his disappearance coincided with that of Arcana PR manager Emma March.


Mars. What better place could there be for lovers to be alone?

The game casts you as Chuck Matthews, a member of the UIPF, the Mars-based United Interplanetary Police Force. Which is why everyone calls them the Mars Cops.

You will be taken through seven phases of gameplay. First comes the mission briefing followed by pre-launch servicing and equipping of your craft.

An animated launch sequence fires you out of Martian orbit ready to destroy any aliens or asteroids foolish enough to enter your sector. If you survive the onslaught you are rewarded with a re-entry and landing sequence, followed by post-launch vessel servicing and mission debriefing.

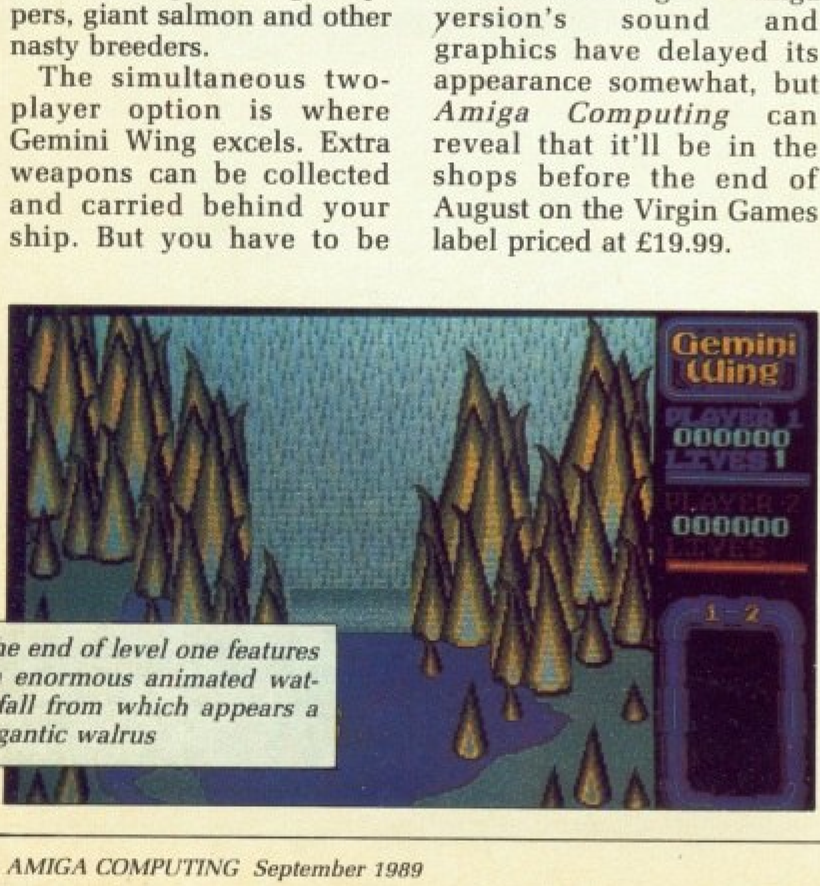
"Only the most capable of pilots is going to come out of this one alive", Max Taylor told *Amiga Computing*. Max is now back coding the game himself in a secret Edinburgh hideaway. With any luck it will be ready for a £19.99 release by the beginning of September.

Wing and a prayer

THE coin-op conversion to watch out for this month is Gemini Wing, a seven level shoot-'em-up featuring organic backgrounds full of mutated butterflies, ship-seeking snippers, giant salmon and other nasty breeders.

The simultaneous two-player option is where Gemini Wing excels. Extra weapons can be collected and carried behind your ship. But you have to be careful because they can be stolen by both your playmate and the aliens.

The game has been developed by Krysalis Software for The Sales Curve. Difficulties enhancing the Amiga version's sound and graphics have delayed its appearance somewhat, but *Amiga Computing* can reveal that it'll be in the shops before the end of August on the Virgin Games label priced at £19.99.



The end of level one features an enormous animated waterfall from which appears a gigantic walrus

Christmas carve-up

TIPPED to be a potential Christmas chart topper is Hard Driving from Domark/Tengen, a single-track test where speed is the aim.

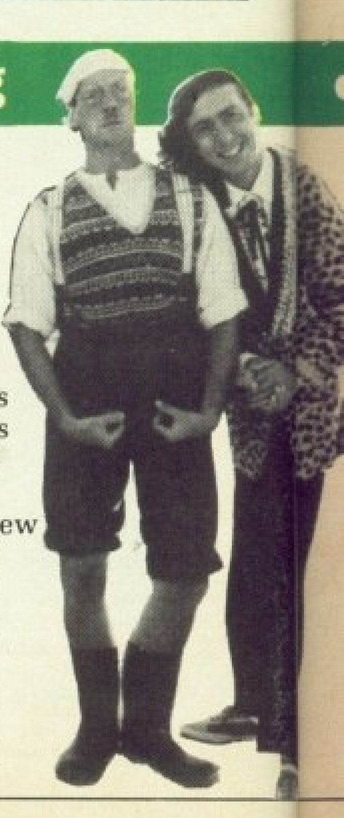
Star Wars programmer Jurgen Freidrich has been working at Domark to convert the coin-op game, which was originally designed by Atari as a driving school simulator.

And now for something

HELLO. We apologise most sincerely to those of you who are reading this story under the impression that it is in any way connected with the television programme Monty Python's Flying Circus. This was due to an error in the printing stage of the magazine.

This piece is in fact titled The Pleasures of the Dance, a story about a new collection of Norwegian carpenter's songs compiled by Oscar Tritt...

Ahem. We apologise for the above apology. This apology was unnecessary and appeared in the magazine owing to an administrative error. This story is not about, as stated in the above apology, a new collection of Norwegian carpenter's songs, but about the computer game of the



All the latest news on the games software scene

The legend lives on

IT'S here, Barbarian II – The Dungeon of Drax, the eagerly awaited sequel to the game which got banned in Germany.

It has been programmed on the Amiga by Dave Chapman whose previous work includes such classics as Dan Dare II on the C64, Sorcery on the CPC and Scrabble on the Amiga.

Palace boss Pete Stone told *Amiga Computing*: "This is the definitive edition, containing all the playability of the previous versions but with improved colours and sound.

"All the sampled grunts, groans, thwacks and thuds of the ST version are there, but our sound maestro Richard Joseph has made full use of the Amiga's four-channel stereo to add a whole new dimension".

Work is already under way on Barbarian III, which is planned as the last in the series. That won't be here until next summer at the earliest. Meanwhile, Barbarian II is in the shops now at £24.99. We'll have a full review next month.



Programmer Dave Chapman has made sure there'll be no time to hang around in Barbarian II

Germans to release crude simulation

RELINE, the German software house best loved for its animated dance intro to Hollywood Poker Pro, is to release a "business" simulation this September called Oil Imperium.

Instead of long lines of figures and tables, you will be presented with clear graphics and diagrams. All sorts of moves will be possible: Buying, selling, trading, spying, merging – even sabotage will play a part. Arcade sequences will be included for situations like drilling and fire fighting.

"It is very realistic simulation of a free enterprise system", says PR person Simon Harvey. "Stakes and risks correspond to the real business world".

REVIEWED THIS MONTH

97% F-16 Combat Pilot
96% Wayne Gretzky Hockey
90% FOFT
89% Grand Prix Circuit
88% Honda RVF
81% Skweek
79% African Raiders
78% Xybots
76% Phobia
76% Savage
72% Millennium 2.2
64% SDI
63% Time Scanner
61% Gold Rush
59% Licence to Kill
58% Circus Attractions
19% Navy Moves

MAX HACKS

- Populous
- Forgotton Worlds
- Lords of the Rising Sun

Gallup Chart

		Last Month
1	Populous Electronic Arts £24.95	1
2	Lords of the Rising Sun Cinemaware £29.99	NE
3	Forgotten Worlds US Gold £19.99	4
4	Kick Off Anco £19.99	7
5	Silkworm Virgin/Sales Curve £19.99	8
6	MicroProse Soccer MicroProse £24.99	3
7	Blood Money Psygnosis £24.99	6
8	Gunship MicroProse £24.99	5
9	Millennium 2.2 Electric Dreams £29.99	10
10	Dragon Ninja Ocean £24.99	NE

completely different



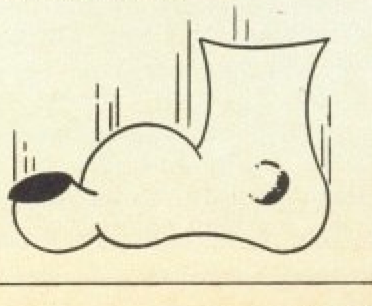
television programme Monty Python's Flying Circus...

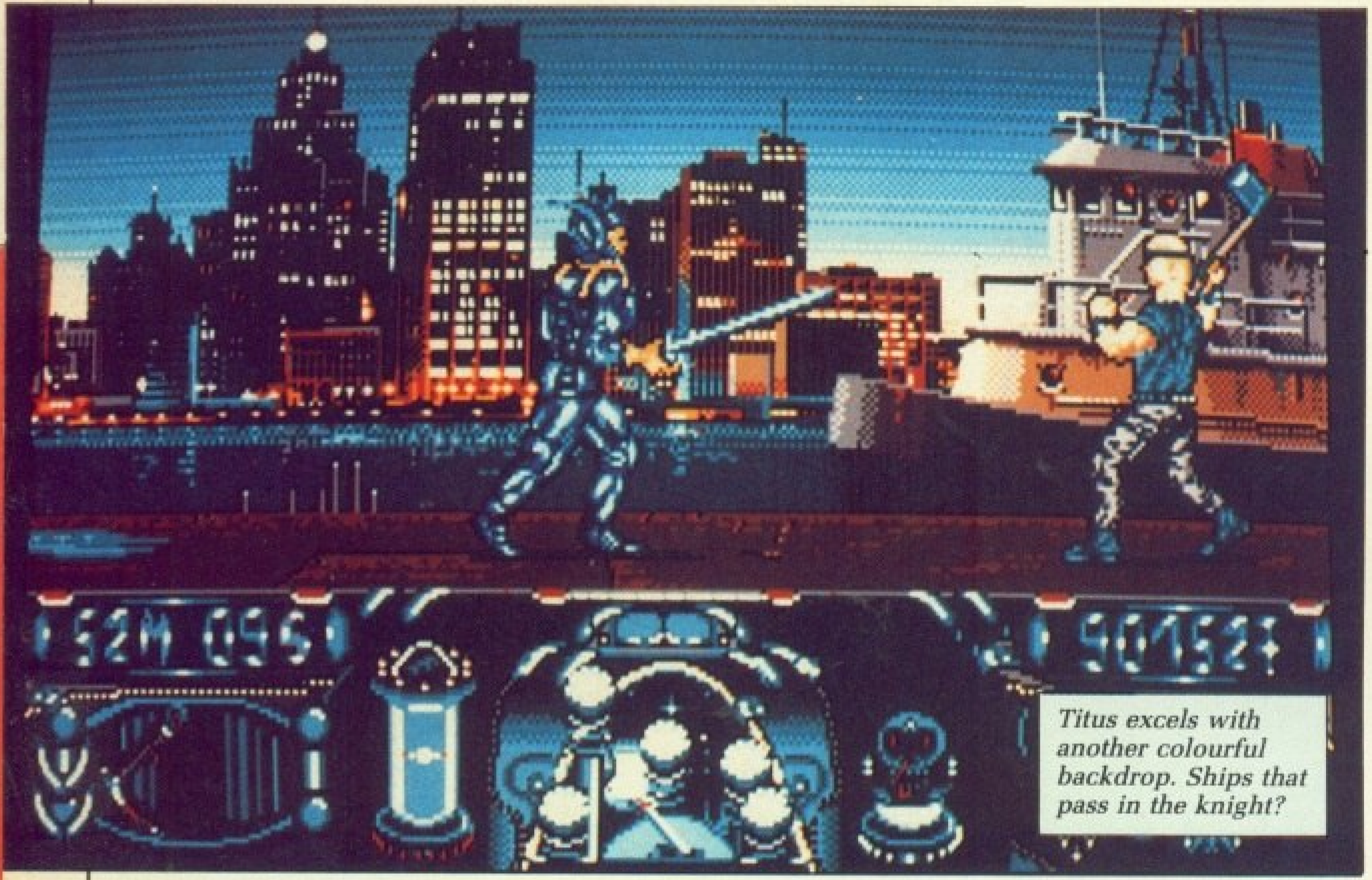
The Norwegian Trentheim Hanna dance is held every 25 minutes in the town of Trentheim, in which the old ladies are struck about the head with round sticks and thrown into the fjords with their boots tied around their...

We apologise for that short extract from The Pleasures of the Dance which appeared in *Amiga Computing* owing to the same administrative error which resulted in the first apology. The rest of this article is now totally taken up with news of the computer game of the television programme Monty Python's Flying Circus.

Seriously folks, the licence to develop the game has been snapped up by Virgin Mastertronic, which has handed the programming job over to the highly-acclaimed Core Design. This will be Core's first game for Virgin, and it has been made clear to them that the original bizarre Monty Python humour must be retained while incorporating such classics as the Ministry of Silly Walks and the Dead Parrot Sketch.

It should be ready for release early next year. Pardon? How much will it cost? How should we know? We were just asked to write a short story to publicise the game. We didn't expect a kind of Spanish Inquisition. *(Loud noise, enter Palin, all together now...)*





Titus excels with another colourful backdrop. Ships that pass in the knight?

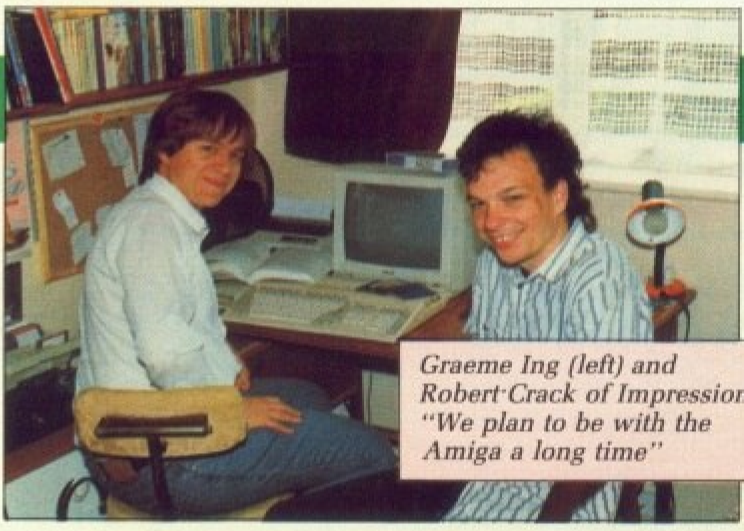
Shut that door!

TITUS is working on a new Amiga game due for release in October, Knight Force, an arcade adventure in the hack and slay tradition.

Nothing but a plot and screenshot at the moment. The former boils down to running around space sealing time gates in order to preserve the chronological balance of the universe. The latter looks as if the graphics will be up to the usual high standard of the French.

Your skills are the powers of a mighty knight, the courage of the legendary dragon and the agility of the soaring eagle. It says here. Hmmm. Let's hope the gameplay is better than recent Titus efforts.

Impressions goes underground



Graeme Ing (left) and Robert Crack of Impressions: "We plan to be with the Amiga a long time"

NOW that Impressions Software has amicably ended its run-in with Mirrorsoft over the backdrops for Chariots of Wrath, the development team of Graeme Ing and Robert Crack has started work in earnest on a space strategy called Emperor of the Mines.

Money is king in this wargame. Cast as the Emperor, you will be in command of a vast fleet of spacecraft which is exploring and exploiting the local mineral deposits.

Many hazards will have to be faced, including battles against the elements, mechanical failure, financial problems and the neighbouring warrior race.

Graeme, who left his job programming IBM PCs two years ago when he discovered the Amiga, is coding 20 episodes into the game, each with its own unique puzzle to solve. There will be 11 different types of craft to use.

Graphics artist Robert, who was trained as a physicist, will be adding bar, line and 3D charts on which you will see information about the 200 moons awaiting exploration.

Developed on the Amiga, Emperor of the Mines will be out in September, price £24.99, on the new Plato label.

Aiming for double top

ANCO is to follow up the success of Kick Off with two more games before Christmas, Rally Cross and Player-Manager.

Rally Cross will be out first – on September 11 if everything goes to schedule. It is a six-track simulation of rallying and will feature what Anco boss Anil Gupta terms intelligent racing.

"By that I mean computer controlled cars will try to avoid collisions, just as human drivers would in real life", says Anil. "The six tracks will not be simulations of existing rally routes, but will be designed instead with good gameplay in mind".

Player-Manager, which will be released in November, is a soccer simulation based on pure tactics and how ordinary events affect the team. "In Kick Off each player had four stats," Anil's eyes light up, "in Player-Manager they will have 11. The essence will be in determining the correct tactics for each game."

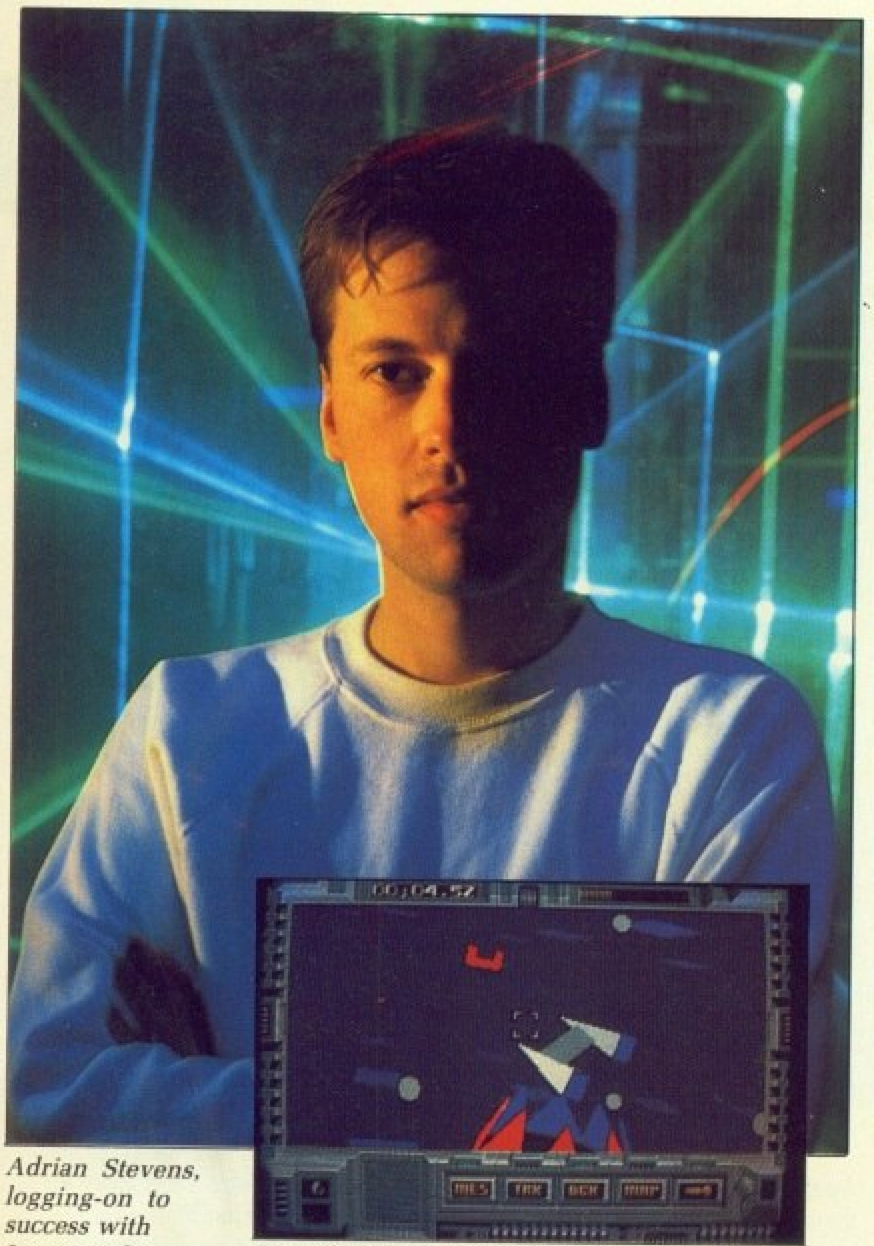
You will start your career at the age of 28 or 31 – Anil isn't sure which yet – as player-manager of a Forth Division team. The aim is to get into the First Division, winning as many cup matches as you can along the way in order to bring in some extra gate money with which to buy better, even foreign, players.

"Foreign attackers will play differently than British ones", says Anil. "They will run circles round defenders like Maradona does. That doesn't mean they are always better players, just different".

You will be able to choose whether to play or watch each game; at 28 you can probably handle 90 minutes on the pitch.

"Addictive's Football Manager can't be beaten as a financial simulation of soccer", says Anil with a dismissive wave of his hand. "Player-Manager will concentrate more on game tactics and everyday life. It is a totally different concept".

Daydream believer



Adrian Stevens, logging-on to success with Imageworks

Interphase – graphics faster than Starglider

REMEMBER Tron, the film where Jeff Bridges gets sucked into a mainframe computer? The same fate can befall you in Interphase, Imageworks' new game from Adrian Stevens, a Starglider-style solid graphics program first previewed a year ago as a demo under the name of Mainframe to much dropping of jaws and low whistling.

Twelve months on there have been some radical changes, but while features have been added the breathtaking speed is still there.

Bridges only had to worry about what went on inside the computer; Interphase weaves a tale which is much more ominous, set in a future where leisure time is plentiful and filled by playing Dreamtracks, experiences stored by professional dreamers.

To share a dream you logon to a mainframe computer – a bit like playing Shades really. With a population hooked on other people's dreams, it is inevitable that the government will twist this to their own advantage and the professional dreamers are made to record messages which will influence the proletariat.

After recording one particularly evil message the top dreamer decides that this is not on. But it is too late, nothing can get past the computer's protection system to retrieve a recorded Dreamtrack. Or can it?

You play the dreamer who, with help from an attractive accomplice, enters the computer to locate the security circuits and manipulate them, allowing your accomplice – who looks awfully like Imageworks' PR person Cathy Campos – to get into the mainframe security building and destroy the tapes. Richard Nixon would be proud.

Interphase encompasses the best features from the 3D games which have come before – graphics faster than Starglider, Carrier Command maps and an atmosphere all of its own. All you need is the nerve to enter the mainframe.

Vive la Populous!

SO pleased with the sales of Populous is Electronic Arts that it has released a data disc of five new worlds called The Promised Lands.

Leading the way, and almost topical, is Revolution Francais, a land where typical Frenchmen gather around chateaux, windmills and cafes in their single-minded search for liberty, equality and fried snails. It's all done in the best possible taste; there are guillotines, but there is no gore.

In The Wild West cowboys and indians fight it out around teepees, forts and jails. Silly Land has larger than life people whose expressions change with the action, and Block Land is a world where everything is made from blocks, including the people.

Last, and by no means least, comes The Bitplanes, a land based on computers and development team Bulldog's own place of work. Cans of Coke, cigarette butts and little ZX81s litter the landscape, which is made of programmers' desks and perforated listing paper.

Although you'll be able to use the playing skills you have already learnt with the game disc, each new landscape in The Promised Lands will need fresh and more complex strategies to complete.

Populous has been number one in the Amiga chart for three months running. "If this disc sells well", says EA Marketing Manager Dave Gardener, "there may be more". At £9.99 who can resist?



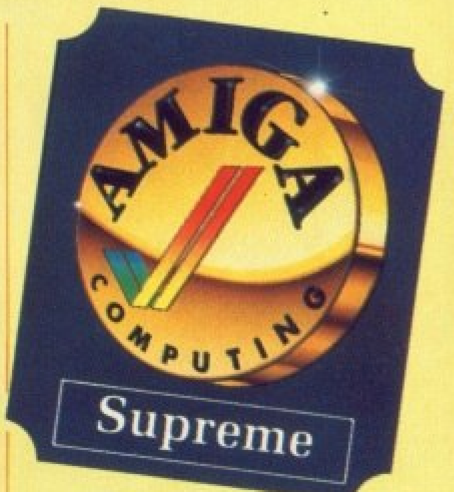
They seek him here, they seek him there, they seek those Frenchies everywhere

F-16 COMBAT PILOT

King of the skies



We'll cross that bridge when we come to it



FLYING is difficult. It takes years and millions of pounds to train a fighter pilot. Yet the war cry among simulator buffs is "gimme realism". Well guyz, with F-16 Combat Pilot you got it. The game is *seriously* difficult.

There is a quickstart option, but it is a bit late to worry about how to get the Westinghouse AN/APG-68(V) radar out of track-while-scan mode and into single-track-target mode when you have a Foxhound and a couple of Floggers unleashing 55kg Aphid missiles at you. You must read the manual before making any serious attempt to play.

Most of the dashboard is taken up by three VDUs which can display 10 different types of information depending on what you are doing. I mean, there's no point in using the instrument landing system while dog fighting.

Setting up the cockpit is down to personal taste. There is an instant combat mode, but you may prefer to have the artificial horizon, a special Smith's LCD design, instead of the weapons status, or Laura Ashley curtains instead of the canopy.

While taking the plane up for a quick tangle is fun, there is an ultimate objective – you have to complete Operation Conquest. To start this you must prove your worth in five areas: Dog fighting, attacks on enemy airbases, taking out strategic targets such as power stations, tankbusting and reconnaissance.

XYB

Gauntlet for the



Anything you can do, I can do better...

Xybots	
£19.99	
Tengen	
Sound	
Graphics	
Gameplay	
Value	
Overall – 78%	

WHAT really matters when you slip the latest arcade conversion into DF0:? Is it how good the original was, how good the Amiga version is or how faithful the conversion is to the money munching machine?

One theory states that any game which makes it to the arcade is going to be pretty hot. If it cuts the ice there, it should make a very playable game at home.

There is another theory that a game you want to spend 20 minutes playing in an arcade is not the same kind of thing you want to take home with you.

And there is a third theory. This theory, which is mine, claims that a good game for a home computer would be one which was perhaps a little too complex for the arcades.

Xybots is that game. There is a lot of depth to the plot built on the age-old 3D maze. You run around a complex of corridors picking up coins, extra weapons and energy. A friend can join you wandering around the same maze with a separate 3D view.



The F-16c, a Spitfire of the 1990s

F-16 Combat Pilot
£24.95
Digital Integration

Sound	██████████████░
Graphics	██████████████░
Gameplay	███████████████
Value	███████████████

Overall – 97%

Complete at least part of each mission and return safely to qualify.

Before taking off you can set the weather conditions, day or night and cloud base. For night missions you can carry the Lantirn, which gives night vision and can tie in with some weapons for automatic aiming.

The ground crew will recommend which weapons they think you need for any mission, but you can override this at a well drawn and animated hangar screen.

The F-16 is a single seater, so in place of a navigator you have a computer. Before take off you plot a course to the targets. This is then programmed into the flight computer which will calculate a bearing while you are airborne.

It would be impossible to say if this is an accurate simulation, anyone who knows has signed a piece of paper promising not to tell. But a stop-watch and some published specs revealed a true-to-life roll rate and rate of climb.

Flying is predictable, with a better frame rate than Interceptor, more accurate turning and banking than Falcon and none of the maths problems which afflict Jet. It is safe to say that this is more like flying a fast jet than any other Amiga simulator.

Digital Integration has a head start in these matters. Dave Marshall – the boss – used to program real military flight simulators and has worked on the Jaguar, Lynx helicopter and Harrier. He has built up a huge library of the technical specifications for the F-16c and knows who to ask for some of the less readily available information.

For the brave of joystick there is a two-player mode which allows you to link machines with a serial cable. The weapons and conditions are chosen for you, so it is a matter of skill as to who survives the encounter.

The game has pretty Falcon style ground-based scenes and some terrestrial detail when you are in the air. The ground is flat, with pyramid hills. I suspect other aircraft are quite detailed but at Mach 2 with heat-seeking missiles to worry about, my flying skills aren't up to checking. Yet. I am going to improve. F-16 will take a lot longer to master than Interceptor. But is much more rewarding.

There are few grounds for complaint. The graphics are a port from the ST, it doesn't allow you to put the save game disc into DF1: but these are niggles in a game which is worth every penny of the price, which is why I have given it the highest score yet any game has achieved in *Amiga Computing*.

Simon Rockman

OTS

21st Century

While teamwork is the best way to take out the robotic monsters, especially if one of you uses a stun weapon, there is a race to the finish which will yield a bonus coin.

Money makes the game go round. At the end of each level you visit a shop. Here teamwork is really important. There are loads of accessories for sale. Some – like a higher level of energy, stronger shields and better weapons – only help one play. Others – like keys, and sensors which add detail to a plan-view map of the maze – help both sides. You can share and enjoy by giving coins to your comrade in arms.

Xybots was great in the arcade but there are things which thousands of pound's worth of dedicated hardware can do which an Amiga cannot. So something has to be sacrificed to effect the conversion. In the case of Xybots this isn't very much.

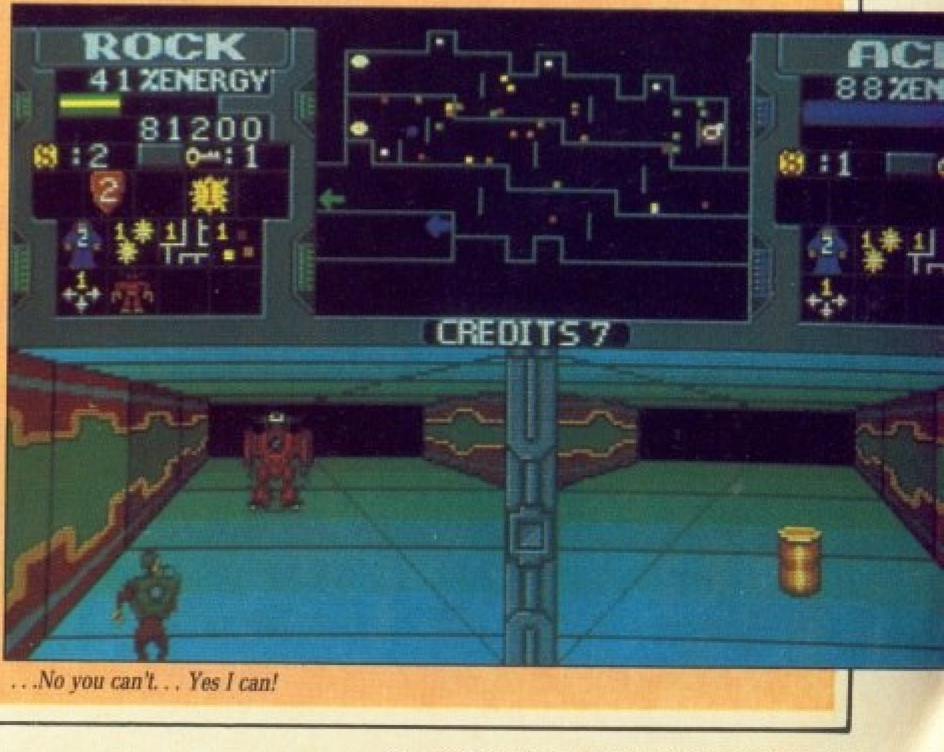
The game retains a high degree of accuracy, paying the price with speed. A lot of action on the screen slows things down, particularly when both players can see each other.

The attract screen animation has been retained but the scenes in the shop where one player waits for the other to finish have been cut. It's cute but no real loss.

More of a problem is the inability to turn and fire, imposed by having to use a standard joystick instead of the wacko arcade controls.

In the balancing act between playability and authenticity Tengen has scored a perfect 10.

Simon Rockman



. . .No you can't. . . Yes I can!

WAYNE GRETZKY HOCKEY

Watch the graphics puck up

AMIGA COMPUTING Supreme

SPORT simulations have a habit of falling short of expectations. They generally fit into two categories: Raving joystick wagglers and the million-parameter strategy marathons with no game to play.

With respect to TV football fans, we have yet to see a sport simulation which gets that critical mix of strategy and arcade action right.

Wayne Gretzky Hockey was voted Best Sports Simulation of '88 in the USA, where pounding the puck is as much an institution as the hot dog. They were bound to like it.

But bring it over here where no one knows who Wayne Gretzky is, and the odds are it's not going to sell. Which would be a shame.

After a surprising animation sequence followed by a good title tune and digitised HAM loading screen, you begin to feel you have something special in your drive. Something tells you that this piece of software was written for the Amiga by people who knew what they were doing.

The no frills Game Setup Menu is packed with options to click on. There are home team and visiting team columns. You can play either of the two, neither of the two, or both, where it helps if a friend joins you.

There are four modes of play. Control Player puts you in charge on the ice; all coaching decisions are handled automatically. You move a mouse-controlled cursor around the rink and the player you are controlling, easily recognised by his white helmet, follows the cursor.

Combinations of cursor movement and button-presses control his actions, right down to grabbing an opponent and holding him against the boards. In two-player mode, your friend would control his man on the opposition with a joystick in port two.

For people who hate or are no good at arcade action, there is a Coach Only mode. Here you are responsible for setting up the 18 team formations and deciding when to make changes during a game.

The best part of Coach Only is that you don't have to stop the game to make changes. Function key presses cause the team to start a different play or to come off the ice while the next formation piles on.

In this simulation you don't just choose parameters before the game then sit back and watch – you have to continue taking coaching decisions throughout the game.

Once you've mastered both the above modes you can choose to play and coach together. Difficult, but it gives you an incredible feeling of power over the game's outcome. Ice hockey is fast – one bad decision or play and you could find yourself a couple of goals down.

The fourth mode of play is my favourite – Wayne Coaches. Here the computer handles the coaching and the play on the ice. Set both teams to this mode and you can sit back and feast your eyes and ears.

The sound effects are sampled from a real rink. The puck being slapped, the crash of bodies and puck against walls, the murmur and roar of the crowd, the referee's whistle – they are all there to add even more realism.

If you missed the action when a goal is scored, an instant replay option lets you view the last eight seconds of play in normal, slow or fast motion, forwards or backwards. Nice touch.

When play is stopped because of a foul the viewpoint changes to 3D with an action replay screen hanging from the roof. Here you see an animation of the referee's sign language



Wayne Gretzky Hockey
£24.99
Bethesda Softworks

Sound	16/16
Graphics	
Gameplay	
Value	

Overall – 96%

for the foul he has blown for. When fights occur – I have yet to instigate one – the action is shown on this screen.

Teams can be set to play at any of four difficulty levels ranging from High School to Pro. You can set the periods to be 5, 10, 15 or 20 minutes. Play can be either Slow or Normal. For Normal read Fast.

Games and teams can be saved or loaded at any time, even during a period. Four teams are supplied, while an editor allows you to make up your own teams, giving each player strength ratings in 11 categories. Give every player a rating of nine in every category and you'll have an invincible, if not very realistic, team.

You can display game stats and team rosters or send them to a printer. When coaching, printouts are indispensable.

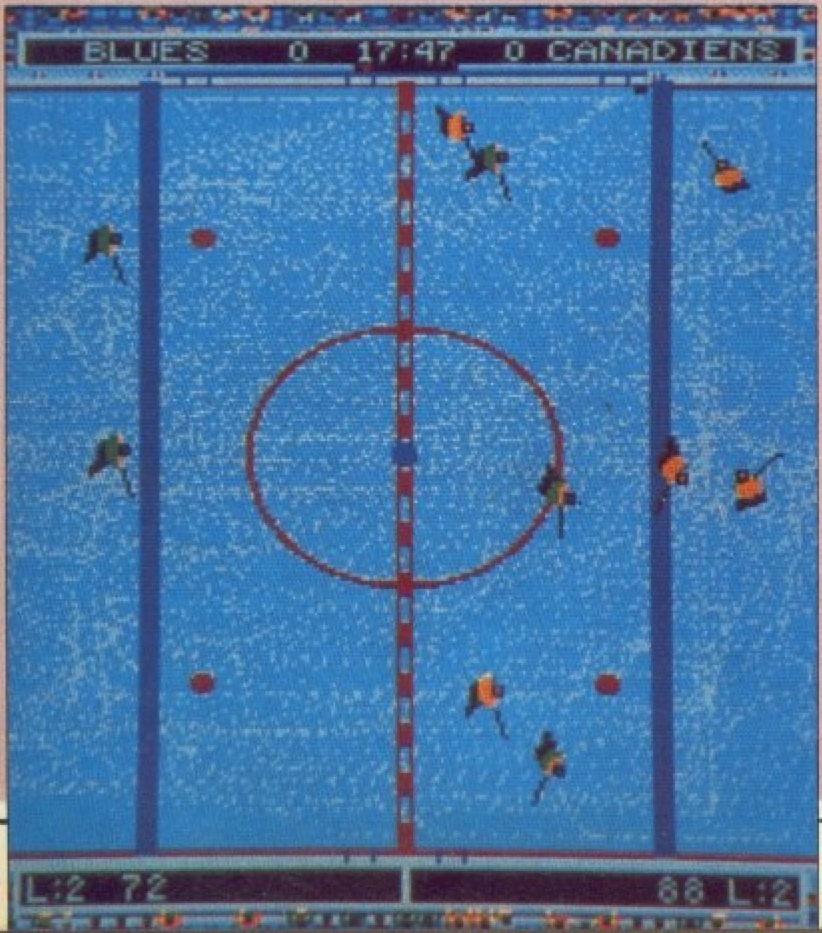
The short manual explains all the options and how to use them clearly. There is even (thank heavens) a brief description of the rules of ice hockey, plus hints on coaching and controlling players.

What it doesn't explain is that the game will not run properly on a machine with extra memory, which is weird because the box claims additional graphics with 1 meg. Sorry chaps, got to knock some marks off for that.

In the end it didn't matter, it was worth unplugging everything and upending my machine. Without a doubt, Wayne Gretzky Hockey is the most accurate and enjoyable simulation of a sport I have ever had the pleasure to play.

Jeff Walker





SAVAGE

Looking for love



SAVAGE isn't your ordinary barbarian. He's psychic, has great magical powers and is going steady with one maiden. The loss of the latter two has made him angry. Not mildly angry, with the type of anger that would make any rational barbarian wait a couple of thousand years for someone to invent MPs and then write and complain, but really quite astonishingly angry indeed.

And to cap it all, whoever nicked his magic and his love has not only imprisoned him, but has also made the mistake of leaving him his battle axe. Someone, somewhere, is going to regret that.

So it's off we jolly well go down the dark and dank corridors, putting cold steel – OK, cold iron for the pedantic – to the many foes that block his way. Useful weapons are dotted about, and some of the foes relinquish treasures, energy potions and orbiting shields when you zap 'em.

Occasionally you get to meet mid-level guardians, which are best tackled by keeping running. The platform sections – of the fiery pit variety – will have you digging out your Spectrum and Manic Miner to hone your jump timings.

In the first level it's almost a shame to destroy the enemies because, thanks to artist Nick Bruty, they're rather well done. Besides, killing things makes a noise which interferes with the tune – and you wouldn't want to do that, would you?

Kevin Collier, who did the tunes and the SFX, has produced the best set of noises ever to emanate from the Amiga to date. Many people have jammed sampled sounds in some semblance of order before, but Kevin's stuff in this game really does put some arcade machines to shame.

The second level, where Savage discovers the whole escapade is a trick and he must return to the castle dungeon, doesn't seem to be as well thought out as the first. It involves charting a course – Space Harrier style – through hideous monoliths and shooting various static nasties, but something's missing. It's got neat graphics, good sound, but the controls don't work quite convincingly.

Level three – taking Savage's eagle through the dungeon – has better gameplay, good sound, but only competent graphics. It's also got a yukko bit when the eagle gets nixed. Blecch!

The last two levels can be played without completing level one; you only get a single life, but at least you won't be completely stuck if you find the first level too hard.

There's plenty there – two discs full – and level one is great, especially if you liked Beyond the Ice Palace, Ghosts 'n Goblins and similar types. But I have my reservations about level two.

You'll either flip over it or express a complete lack of interest.

Stewart C. Russell

Savage
£24.99
Firebird

Sound / Graphics / Gameplay / Value

Overall – 76%

FOFT

Better than best

Federation of Free Traders
£29.99
Gremlin Graphics

Sound
Graphics
Gameplay
Value

Overall – 90%

Excellence

IT is going to be hard to review FOFT without mentioning Elite. But I'll give it a go.

FOFT is very like Elite. Oh, darn it! Well it's true. To say that the author borrowed some concepts is putting it mildly, but since nearly everything which has been borrowed has been improved upon, this is not necessarily a bad thing. I keep expecting to meet Commander Jameson every time I dock and be able to buy him a drink.

You start docked at a space station in orbit around a rather dull planet. You have nothing but a ship and 150 credits to your name. Your ship comes equipped with two computers, one for navigating and one for general use. The latter is fully programmable by you in a Basic-like language called Simple.

It also offers you access to the outside world by using GalacticNet, the 21st Century equivalent of MicroLink, where you can talk to other pilots, deal in cargo or arrange to re-fuel and equip your ship.

Conversations with other pilots are of a taxing nature because they all seem to have the same grasp of the English language as a certain Spanish waiter in a certain Torquay hotel. If you do manage to get your point across you will be able to make some lucrative black market deals. Like this:

Me: Where are you going? Them: Don't know. Me: Why are you going? Them: Because! Me: Erm. Want to buy some drugs?

(The rest of this conversation is strictly business.)

The FOFT universe contains the regulation number of dimensions. Instead of a flat 2D collection of stars, we are presented with a 3D rotating spiral galaxy. Plotting a course involves zooming in and picking the shortest distance between two stars, taking depth into account.

Animated scans of the multi-planet solar systems are interesting to watch and very useful because they give vital data on the planet you are visiting and what sort of cargo they may want to buy from you.

No expense has been spared in your spacecraft, which comes complete with the latest interstellar jukebox: Press a key and a menu of 20 classical tracks appears for your delight. Everything from my favourite Vivaldi pieces – the largo and allegro from Spring – to some Swan Lake care of Tchai... Tchaicof... that Russian bloke.

The Blue Danube is extremely conspicuous by its absence. It may take you some time to get out of the habit of humming it on final docking approach.

Once you have wheeled and dealed your way to riches life may become rather dull. Time to phone FOFT HQ and ask for some freelance hero-type work. Sure enough, you will be appointed to a mission which will earn you some more money and street-cred points if you complete it successfully.

A typical first mission will have you acting as escort to a group of unarmed cargo craft. Looks like we got ourselves a convoy. Yee- hah!

Graphics are solid 3D, smooth and fast. All the spaceships whizz past at a frightening rate, and you have only a few nano-seconds to sigh wistfully at the loss of the look left/right/behind option of Elite before you are fighting for your life as some pirates try to steal your collection of towels. It's a hard life being a hero.

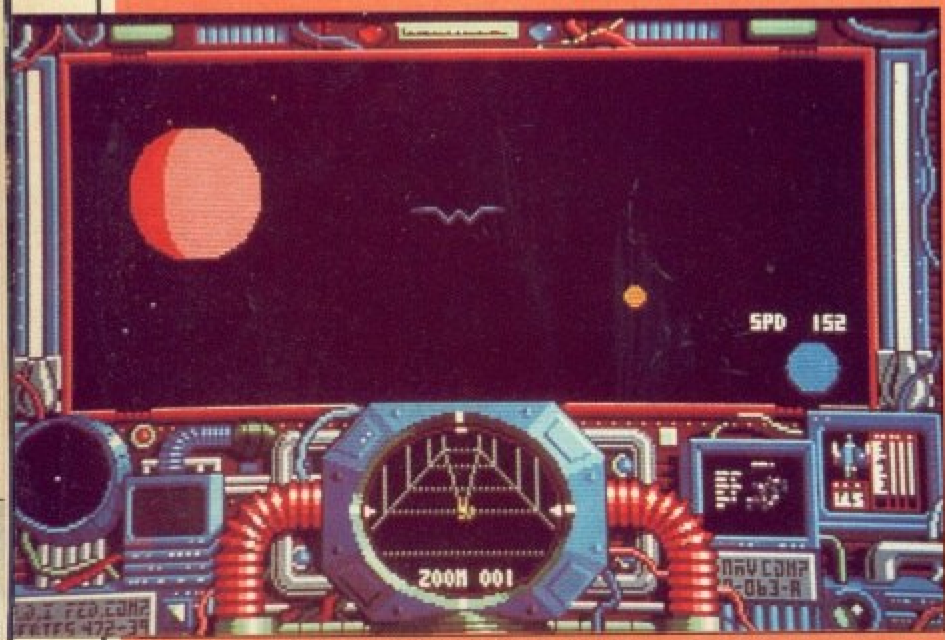
If your ship gets damaged – perish the thought – you can assign some repair droids to fix it.

There is even an unexpected bonus in the form of a planet landing sequence. Re-enter and skim over the glorious 3D scrolling surface until you reach the airport. Landing on the planet will enable you to get better prices for your cargo. This section of the game pays more than a passing resemblance to Virus, but who's complaining?

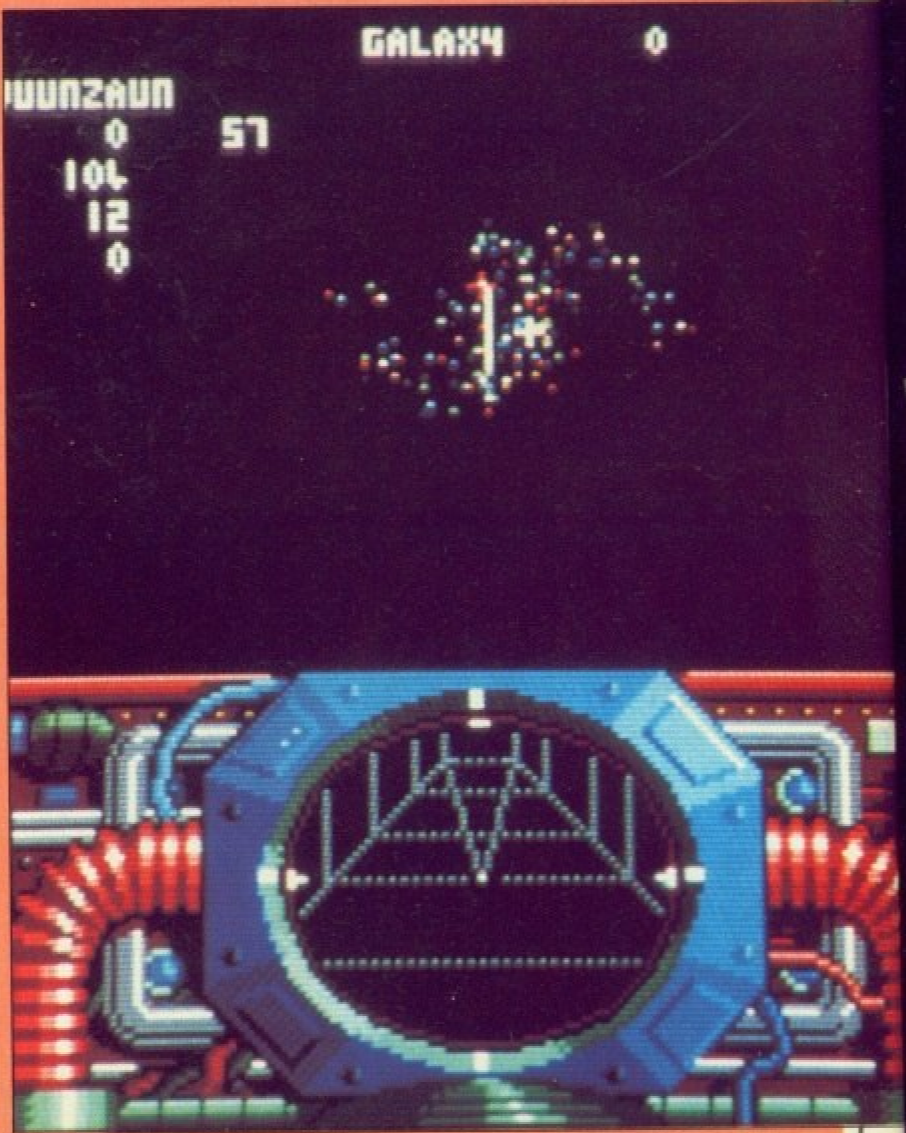
Everything you possibly wished for while playing Elite has been granted in FOFT. Talking to aliens, landing on planets, more music, more weapons, a selection of star drives – the lot! You even get a docking computer as standard.

Criticising FOFT would be petty. Everything is great: The graphics, the music and the incredible gameplay. FOFT has obviously been written by someone who was not content to play the best space game available – he had to write it himself!

John Kennedy



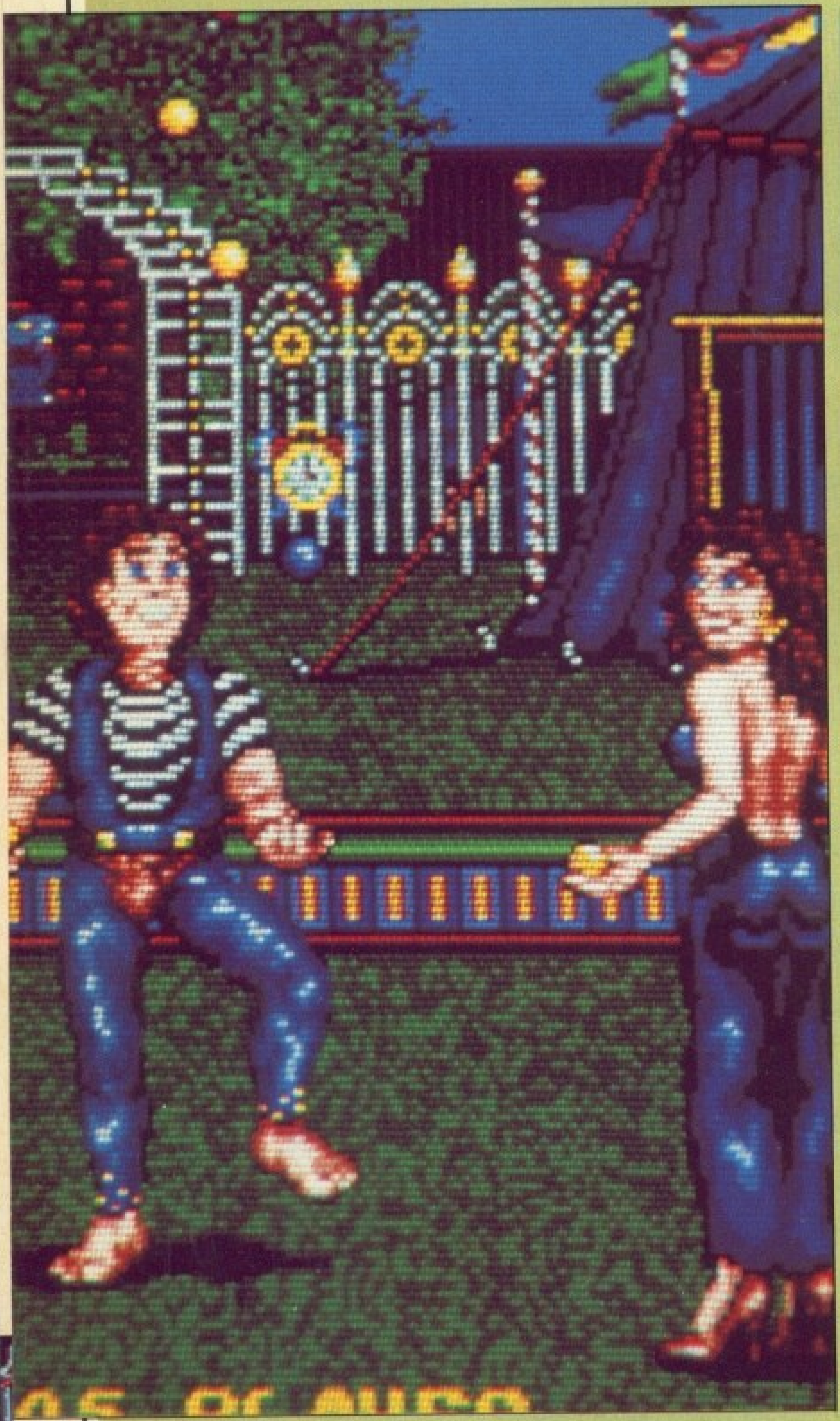
Fly me to the moon, ta ta te-tum tum te tum tum tum



Seems a long way to go for an ice cream

CIRCUS ATTRACTIONS

Life at the top



Keeping those balls in the air



Allez-oops. Squelch. Oh dear

HAVE you ever wanted to run away from home and join the circus? What better way to get the urge out your system than with the latest Golden Goblin release, Circus Attractions.

This double-disc game offers five different performing arts type games. These include trampolining, juggling, knife-throwing, tightrope walking and clown-jumping, which doesn't involve a motorbike and a lot of worried little men in red noses, but three clowns being catapulted across the circus ring using planks placed across barrels.

By careful timing and some careful aerial manoeuvres you can land the hapless little fellow on the correct part of the plank and send his compatriot into orbit.

This is by far the best game and looks very funny. The animation and spot effects are good, but after a short time it dawns on you that this is all there is. There are clowns. They jump.

The juggling is disappointing. Not only is it technically inaccurate – you are reading a regular juggler here – but it is downright silly as well.

Just when you get the hang of juggling six tennis balls you are run down by a midget on a motorbike. This game is not kind towards small people. Perhaps the programmer was attacked by a garden gnome when a child.

Trampolining next. You get on the trampoline and bounce up and down. The audience get bored and the game stops. I know how they feel.

Tightrope walking is, erm, different. A female assistant walks across a rope suspended above the ring. If she wobbles, which she does with alarming regularity, you make her wiggle her arms about to try to regain her balance and so prevent her from falling.

Various jumps and somersaults can be attempted if you feel overly confident and want to fall to a horrible death. The computer makes a "Wheeeeee" noise and your badly overworked imagination must do the rest.

Knife-throwing proves an interesting experience. An assistant hands you knives which you aim and throw at a human target tied to a large rotating wheel. The assistant will occasionally pass you a stick of dynamite which will explode when you take it. If you don't take it, the assistant will explode.

Quite why she tries to blow you up is never explained. Perhaps she is part of the terrorist wing of the Female Assistants and Midgets against Exploitation movement.

Each game can be played individually, or with someone you wish to get into an argument with. In juggling, one player passes the balls to the other. With the jumping clowns, each player takes it in turn to control a would-be astronaut. Similarly with the other games – no direct competition, just two players.

The music is of the predictable Circus March variety. On the Amiga it is beautifully played, but that doesn't mean it is enjoyable. After hearing the same little ditty over and over again every time you accidentally fall off the trampoline, you will reach for the volume control.

The instruction manual has been translated from the original German and is very funny. It is actually meant to be funny. The bad translation adds to it.

But it doesn't change the fact that what we have here is a collection of five short gamelets tied together with a common circus theme. Each game will last about five plays before becoming boring, and that includes the two-player options. It makes a change from shooting aliens, but then so does washing the car.

John Kennedy

Circus Attraction
£19.99
Golden Goblins

Sound
Graphics
Gameplay
Value

Overall – 58%

GOLD RUSH

Strike it rich in California

Gold Rush
£24.99
Sierra On-Line

Sound

Graphics

Gameplay

Value

Overall – 61%

DOES the idea of getting money for nothing appeal to you? Of literally picking your living off the ground? To the population of North America in 1848-49 it did. And it began one of the largest mass migrations in history.

Gold Rush from Sierra On-Line is one of the latest offerings in the 3D Animated Adventure series. These take the form of a sort of film in which you play the leading role, moving your character around a 3D landscape and interacting with other animated characters and objects.

Movement is via keyboard, joystick or mouse. The mouse control is good because all you have to do is position the pointer where you want to go, hold down the right button, and Jerrod will walk towards it.

It can be a little difficult getting in and out of doors this way, a joystick is better there.

The game opens with a well animated and quite humorous title sequence which can give you a few useful hints if you watch closely. The sequence leaves you, Jerrod Wilson, on a bridge in Brooklyn circa 1848. The rest is up to you.

Everyone you meet seems to be talking about the gold strike in California and of all the people heading out that way. You must make preparations for your departure and stock up on things you think you might need for your trek.

And decide how to get there, because – without giving too much away – there are three ways to get to the gold country, two by ship and one overland. This is an adventure with a multiple-route solution. It would be nice to see more.

One of the first problems you may face is being desperately short of cash, although your credit is still good in a few stores. Perhaps your bank manager would be sympathetic, or you could try to sell your house before the market collapses again.

Points are gained for making correct decisions. Some are given just for being a nice guy, like if you put flowers on your parents' grave. This means you always have something to aim for. Even if you successfully complete the first stage of the adventure, you may have missed something that would have given you a perfect score.

The animation is fairly smooth but in a rather low resolution, which shows its PC ancestry. There is generally quite a lot going on in each scene. Some of the animations are entertaining, although they can be slow.

One annoying problem is that on an unexpanded Amiga most screens have to be loaded in from disc each time and although a 1 meg machine will cache several screens, there is still a second or two delay between them because they have to be decompressed.

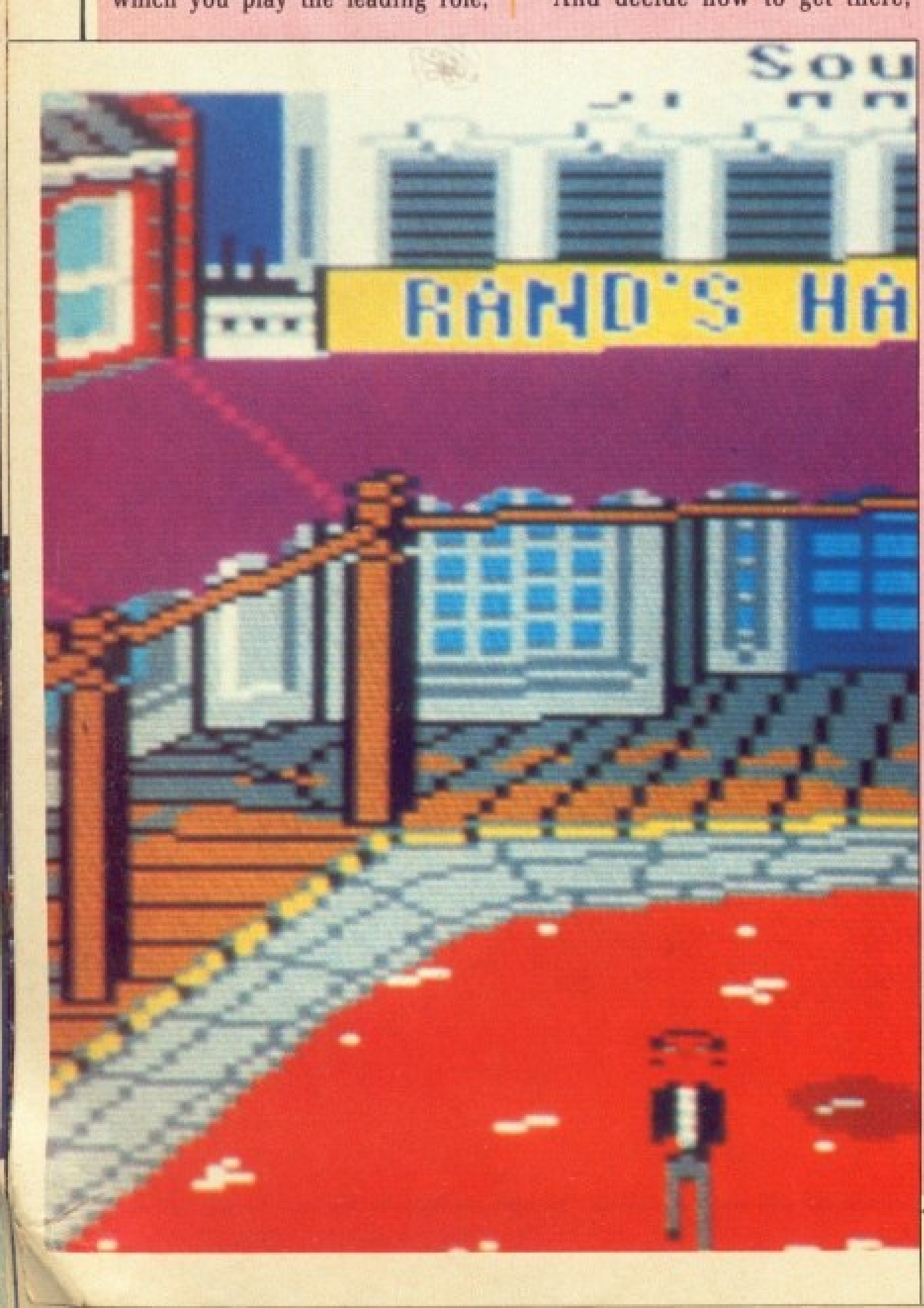
The sound effects are terrible. Despite a few nice musical jokes it is imperative for your sanity that you turn the sound off.

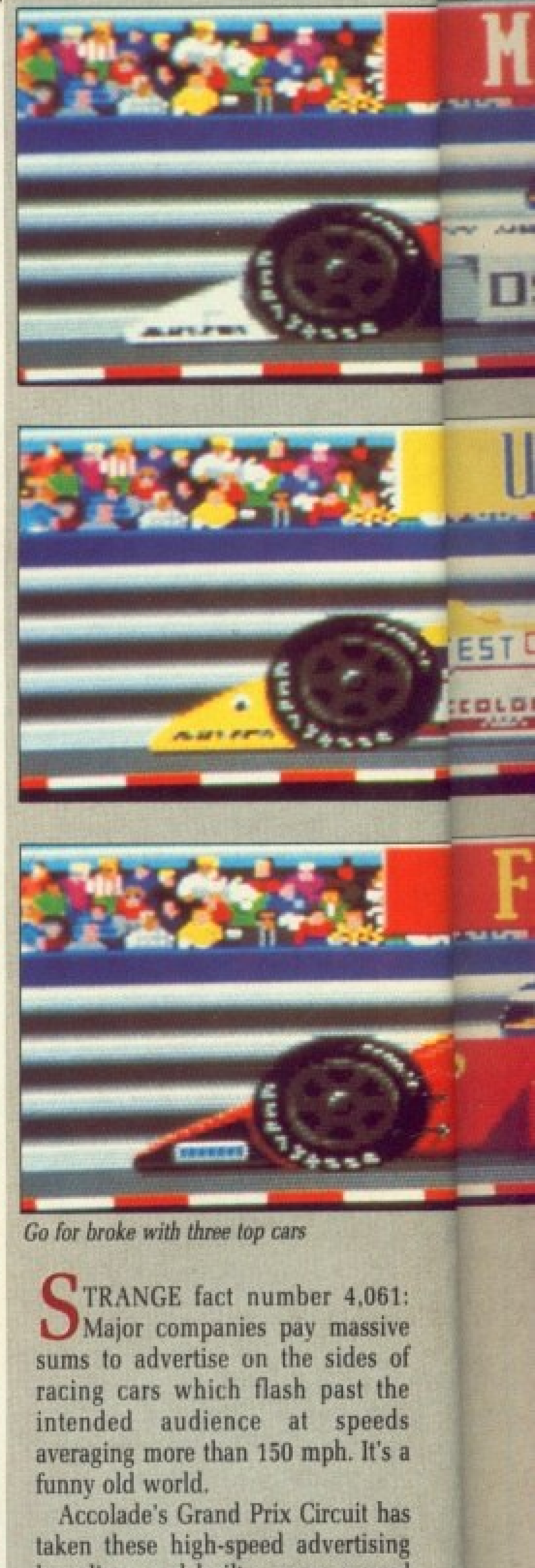
The game comes on two discs and you certainly get your money's worth with all the booklets, maps and expensively printed instruction cards.

One of the books is a short history – more than 80 pages – of the gold rush era. This is also used as a novel way, of security (pun intended). Instead of asking you for a specific word from the book it asks you a question on the text. It gives you a hint as to which page to look on.

One last point: Gold Rush multitasks, so if you have the inclination, the memory and a multi-tasking brain you can run other programs at the same time. Or even play two games of Gold Rush at once. Or three. Or four. Or...

Green





Go for broke with three top cars

STRANGE fact number 4,061: Major companies pay massive sums to advertise on the sides of racing cars which flash past the intended audience at speeds averaging more than 150 mph. It's a funny old world.

Accolade's Grand Prix Circuit has taken these high-speed advertising hoardings and built a game around them. Not that there was much design involved because Grand Prix Circuit follows the real Formula 1 championship almost to the letter.

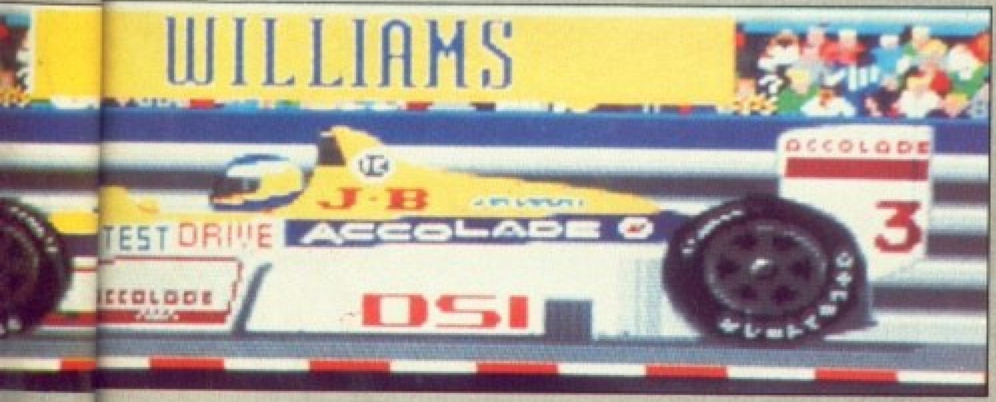
As far as presentation is concerned, the view from the cockpit is similar to Accolade's recent Test Drive II. The cockpit has very few working controls – you've got exactly what you need, a rev counter, steering wheel, gear lever and damage indicator.

This display remains relatively constant across the three cars on offer

GRAND PRIX CIRCUIT

Wah Nige rides again









Cockpit view of a super simulation

– a Ferrari, a Williams and an all-conquering Maclaren. The Ferrari is a good beginner's car, cornering well but losing a little power on the straights. The Maclaren, on the other hand, is a bitch to handle but travels faster than a speeding bullet. The Williams is a good compromise, taking corners well and performing admirably in a straight line.

In itself, working your way through these three would be enough variation, but GPC also offers five skill levels. The first takes care of the gear changing and endows the car with near total invulnerability from crashes.

From level two upwards the going gets tougher, with even the relatively user-friendly Ferrari proving quite a handful in the top flight.

There are eight circuits in all, taking in Brazil, Canada, Britain, Germany, Italy and Japan plus the two street circuits of Detroit and Monaco. Any can be used for practice purposes before entering either a single contest or a full eight-race championship.

Points are scored in the usual way – nine points for a race winner falling to a single point for sixth place. A save and load option allows you to take a rest at any stage, with up to nine separate games accommodated.

So much for the options; how does the racing feel? Well, I've never taken a car around Hockenheim or Silverstone – but I know a man who has and he's completely over the moon with GPC's recreations of some of his favourite circuits. The achievable lap times are accurate to tenths of a second, as are the default lap records and opponent's times.

There are a couple of little faults to rain on the parade. In fact, a lack of rain is one of the most serious. Imagine an entire Formula 1 season played out in blazing sunshine with the wet tyres staying in their packing crates throughout. Very unlikely.

On a similar note, the opposition may vary in ability, but one thing remains constant – they all drive impeccably safely. There's no need for track marshalls or a system of warning flags because if there is a prang you can bet your exhaust pipe that *you'll* be involved.

The only other real problem is the flatness of the tracks. A few hills and bumps wouldn't have gone amiss, especially in Monaco, which is notorious for the steepness of its hairpin bend.

Otherwise realism prevails. Even at the lowest level, the car steers accurately – it's all too easy to let the tail end slide out when cornering, and it's easier still to overcompensate. The backgrounds vary from circuit to circuit to generate some sort of character. Even a three-lapper needs superhuman concentration.

Add a couple of little features such as the speedy wheel changes and the ever so polished presentation and Grand Prix Circuit amounts to the most complete simulation yet of high speed car racing.

Ciaran Brennan

AMIGA COMPUTING Value

Grand Prix Circuit
£24.95
Accolade

Sound	
Graphics	
Gameplay	
Value	

Overall – 89%

HONDA RVF

Ride hard, die free

ALL I have is a red bike, six gears and the truth. So said Bob Dylan. Well, almost. Honda RVF from MicroStyle has arrived. Silverstone, Brands Hatch, Donnington Park – it's got 'em. So come on you target for faraway laughter, and ride.

If you fancy yourself as Joey Dunlop or you saw Silver Dream Machine and thrashed your moped up and down the block for months, then this is the thing you have been waiting for.

Take your mean machine for a practice before the big race and suss out the circuit. Slide around the bends and gun it down the straights. Watch out for the diesel patches and puddles which slow you down.

Oh no, a hairpin. Slip it down a few cogs and lean hard. Feel your knee scrape the track. Fight for control. Get a good time and you could be in pole position.

The main object is to compete in a championship season consisting of eight races, and to get your licence upgraded so you can race against even better drivers next season.

A championship table is kept and updated each round so you can see how well you are doing. Points are awarded, obviously, depending on which position you finished the race.

I am pleased to point out to members of OASIS – the Organisation Against Sexism In Software – that a female rider is included in the championship. Although it's difficult to tell under all that leather gear. She's quite good, too.

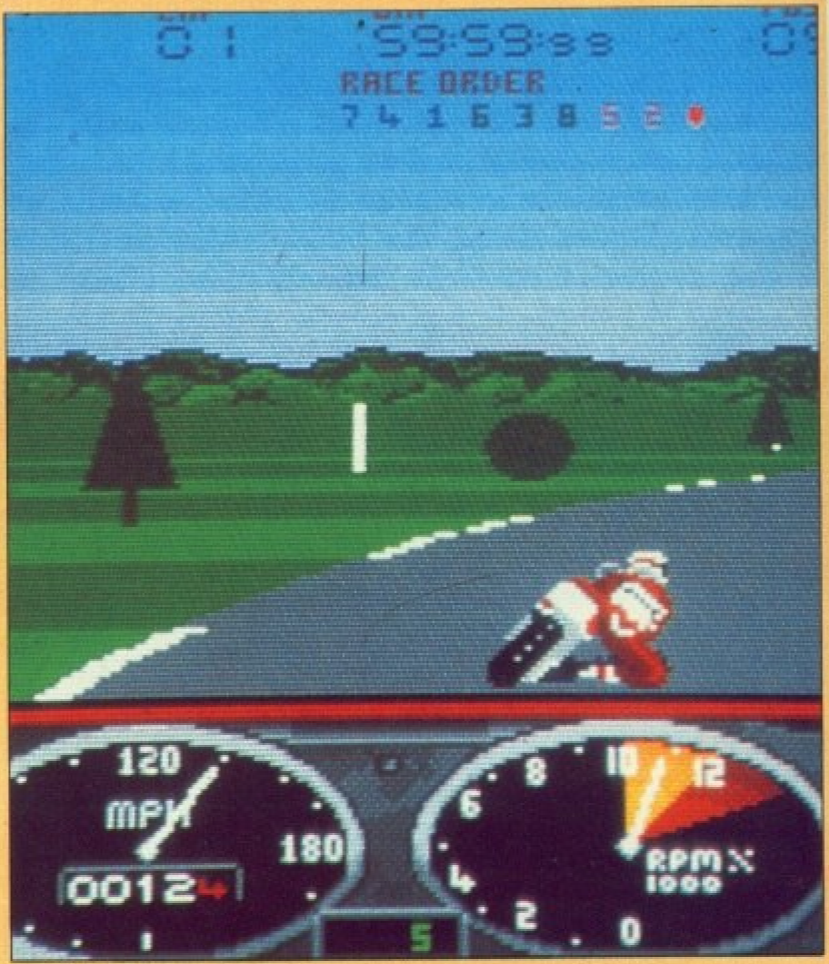
AMIGA COMPUTING Value

The format is that you do a spot of practice – you don't have to, but it makes it easier – and then race for 5 to 25 laps in each of the eight races. This can take a bit of time and your joystick hand will be well knackered by the end of it. Then you have to do it all over again.

A whole series of championships could take all day to play. Even the most avid biker may be a bit bored by the end of this. Fortunately there is a Datalink option – a parallel one strangely enough – so added enjoyment can be had bumping a friend off the track.

Control is by joystick, which is strange considering the spate of race games offering a mouse control option. Generally the mouse is more responsive and in some games necessary to beat the best lap times.

Of course you need to be superdextrous and have a mouse mat the size of the actual track to use it, but it's nice to have a choice.



Brands Hatch here we come

If the unthinkable should happen and you lose it on a bend, you stand a good chance of crashing into the assembled detritous at the side of the track. In a most bone-crunchingly realistic animated sequence the bike will roll, you will roll, and you will both end up in a heartbreaking heap.

Then what? You get back on, of course. Push start your vehicle and get back in the race. The only damage you're likely to suffer from a head-on with a stationary tree coming in the other direction, apart from wounded pride, is a broken speedo and rev counter, which can be fixed easily in the pits. Of course, real bikers don't need these newfangled gadgets.

Amazing graphics really do give you a good feel of the actual track – hills and all – as you race your Honda past the obligatory red and white kerbstones into the nicely graduated sunset.

Realistic graphics, realistic control, realistic sounds, realistic racing, realistic thrills. So if it's raining out, leave the Superdream in the drive and take your Honda for a spin.

Green



And for my next trick a double flip and half pike

Honda RVF
£24.99
Microstyle

Sound
Graphics
Gameplay
Value

Overall – 88%

SDI

Over and over and over again



Playing politics is boxing



Who would want to bomb a publishing company?

THE Strategic Defence Initiative was Ronald Reagan's attempt to solve the world's nuclear weapons dilemma by building more nuclear weapons and putting them into space.

No, it didn't make any sense to me either. I always knew that bloke was one sandwich short of a picnic.

In typical paranoic American programming style, those darn baby-eating Soviets have launched an all-out nuclear attack on the innocent western world. Sigh. As you happen to be in orbit around the earth at the time, the onus is on you to prevent global catastrophe.

To do this you have an SDI satellite which can fire laser beams in all directions and destroy anything that flys past. It has a style very reminiscent of Missile Command.

A unique system whereby you control both the satellite and its weapons sight at the same time is used. It's not hard to see why it is unique. If you play using nothing but the mouse, then pressing the left mouse button will enable you to guide the satellite. Not pressing the left button will move the sight. Pressing the right button will fire your weapons. If this sounds tricky, then I have described it perfectly.

If you have a joystick plugged in as well, you can control the satellite with your other hand. This program will make you ambidextrous if nothing else. A friend might be persuaded to perform this highly-skilled task for you.

The gravity of the earth's peril becomes clear as several thousand missiles *(I've told you a million times not to exaggerate. Ed)* start scrolling from right to left across the screen. Trying to aim your sight on each one individually is a task that even the most ardent mouse user will find impossible.

It is at this point that what must surely be the ultimate nuclear deterrent becomes apparent in the form of holding the fire button down and dragging the mouse frantically across the desk. All this time you must be ready to move the satellite out of the way of attacking space debris by either using the joystick or by judicious use of the left mouse button.

It soon becomes apparent that no

TIMESCANNER

Balanced on a flipper's edge

Timescanner
£24.99
Activision

Sound	▮▮▮▮▮▮▮▮▮▮▮▮▮▮▯▯▯
Graphics	▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▯▯
Gameplay	▮▮▮▮▮▮▮▮▮▮▯▯▯▯▯▯▯
Value	▮▮▮▮▮▯▯▯▯▯▯▯▯▯▯▯▯

Overall – 63%

IF you think that bumpers are only to be found on cars, that tilt is a tropical soft drink and flipper is a dolphin, then this game may not be for you.

If all this jargon means something to you, then you probably had – or are still having – a wasted childhood.

The first thing that really strikes you about Timescanner is that the ball isn't silver, but green. Aside from that the table closely resembles the kind you may find in any decent arcade.

If you're wondering how it manages to fit a decent sized table into one screen, then wonder no more. It doesn't. Instead the screen flips between the top half and the bottom.

You may also notice a small hole near the top of the table labelled Time Tunnel. Activating this will send you to the next in a sequence of tables. Yes, not only is this a multiple-ball game but also a multiple-table game, a mechanical nightmare not even Klaus Kinski could have dreamt of.

The first level is called Volcano. The objective here is to spot – or light-up, for non-enthusiasts – all the letters in the word "volcano" by getting the ball to hit a target at the end of a glass tube. Every spotted letter treats you to a piece of animated trickery as the volcano in the background gobs out some lava.

The second level is Ruins, the object here being to fire all your balls down the collect hole for a multiple-ball finale.

The third play area is called Pyramid and features some funky Egyptian-style background music. The aim is once again to spot the letters, but this time by hitting the relevant targets.

There is an undocumented table that can only be played once you have successfully spotted all the letters on the other three. I'll say no more because it's a secret.

A worrying thought is that Timescanner requires one megabyte, a fact which the packaging and adverts fail to mention. I can think of few things worse than spending cash on something only to find you can't use it. Perhaps this was an oversight on Activision's part. I hope it was nothing more sinister.

Graphically the game is quite pleasing and the theme tunes are pretty good. But there is something missing. I think it's the physical element. There's no room to vent your frustration on the machine, no room for latent telekinetic powers to manifest themselves. The real thrill of pinball is that it is physical. Computerising it can only detract from that. Nice try though.

Green

SDI
£24.99
Activision

Sound
Graphics
Gameplay
Value

Overall – 64%

penalty is incurred for letting the missiles past, other than a slight drop in the overall score. As long as the attacking spacecraft are destroyed, everything is hunky dory.

If all the scrolling baddies in each wave are destroyed and your scoring averages are marked as Perfect, you are treated to the appearance of a dancing duck. As if saving the world wasn't reward enough...

On a personal level I find this sort of jingoistic game as offensive as others find Strip Poker programs. But forgetting the plot for a moment, what sort of game lurks underneath? Not a very good one I'm afraid.

The gameplay leaves a lot to be desired. 12 levels of missiles scroll past relentlessly with only minor variations of attacking aliens. Play soon becomes dull. The graphics are very pretty, but the beauty is only skin deep.

John Kennedy

SKWEEK

You'll be tickled pink

BEHIND the facade of a harmless computer game, Skweek hides a weighty political allegory. Nothing to do with Nigel Lawson, but a tale of invasion, oppression and final glorious revolution, told in Play School terms.

The Skweezettes led happy, carefree lives on the planet Skweez'land, which happens to have 99 continents, all of them pink tiled.

The dreaded Pitark and his Skarks – who are not, and never have been, a late Sixties rock band – invaded Skweez'land and covered it with dark blue Skweeticide.

The Skweezettes, cute little dishmops that they are, were forced to flee to the dull planet Refuznoid. But not without vows to avenge the deed most foul.

Pitark eventually died and the Skweezettes lost no time in planting an agent provocateur back on Skweez'land. Skweek, for it is he, must colour all the continents pink and avoid the deadly Skarks. Once all the continents are cleaned, the Skweezettes will return amid great celebration.

Is it a coincidence then, that if you take Pitark, remove P, R and K, then add an S, L and N, you get an anagram of Stalin? And is it pure happenstance that the second letter of Skweez'land is the same as the second letter of Ukraine? I think we should be told...



Skweez'land. . . Pink tiles and animated dishmops

Skweek has no arms to bear arms, so he resorts to shooting small orange blobs and hopes for the best. Bonuses appear regularly on random squares and Skweek can pick them up for better blob shooting, better speed, a teddy bear, or entrance to the next level.

The teddy bear may seem silly, but to Skweezettes four different teddy bears are a powerful good luck charm.

Skweez'land is pretty strange as planets go – pink tiles and animated dishmops notwithstanding (not even with sitting, either) – in that the continents hang over the Infinite Void of Space.

Unlike most other Infinite Voids, which are dull and black, this particular Infinite Void is pastel blue with moving pink stripes. Just as harmful, though.

The Skarks are a pretty dim bunch, usually milling about randomly, but some make a beeline for you. Very kind of them too. Now you've something to tether your bees with.

The urge to say "And that's about it on the features front" at this juncture is almost impossibly strong, so consider it said.

Skweek isn't one of those games that requires a PhD to remember what to do, the emphasis being more on enjoyment than memory. Still, it is quite useful to remember the various features of each level, for as far as I know the whole 99 levels have to be done in one sitting.

The two Rod, Jane and Freddy type tunes alternate each level. They go well with the game, but from a distance they begin to grate.

The game is undeniably cute, with the sort of apologetic, cartoony monsters common among its genre. Although the loading and title screens may lack polish, the rest of the game is well presented.

A few neat tricks, such as rainbow borders and multi-level sprites, are used – fairly simple to do but they add that little bit of zing.

Plus Loriciels has joined a small group of companies high in my esteem – it bothers with the bottom bit of a PAL screen. Small point, but appreciated.

Parents, don't buy this game for the kids. Be honest, buy it for yourselves. That way, you'll avoid massive family arguments over who gets the next game.

Stewart C. Russell

Skweek
£19.99
US Gold

Sound
Graphics
Gameplay
Value

Overall – 81%



There's funky music in Pyramid

AFRICAN RAIDERS-01

Getting your just desserts



Where the hell did HE come from?

CAR racing games always wind me up because they wont let me cheat. I mean if want to risk disqualification by cutting corners, that's my problem. So what if it isn't realistic – it's fun. At least it would be if I was allowed to do it.

African Raiders-01 (don't ask me, presumably there is an 02 planned) puts you in control of a fast four-wheel-drive desert buggy as a competitor in the African stage of the Paris to Dakar rally. You start in Tunis and have five stages to complete.

The first takes you through a rocky vista to In Salah, Algeria. As in all the stages, there is a fixed route marked with oil drums. This is the safest route. But it's a long and winding road which avoids all the hazards of the Sahara.

Keep to this well beaten track and you're more likely to arrive at your destination in one piece. You will also arrive last.

Taking short cuts is more exciting. To this end you are supplied with a map of North West Africa which has all the landmarks fairly accurately plotted. The buggy is fitted with a compass and satellite navigation equipment.

The two most common hazards are quicksand and nomadic settlements. To get rid of that sinking feeling you can switch to four wheel drive but you're slowed from a maximum of 240 kph to a piffling 80.

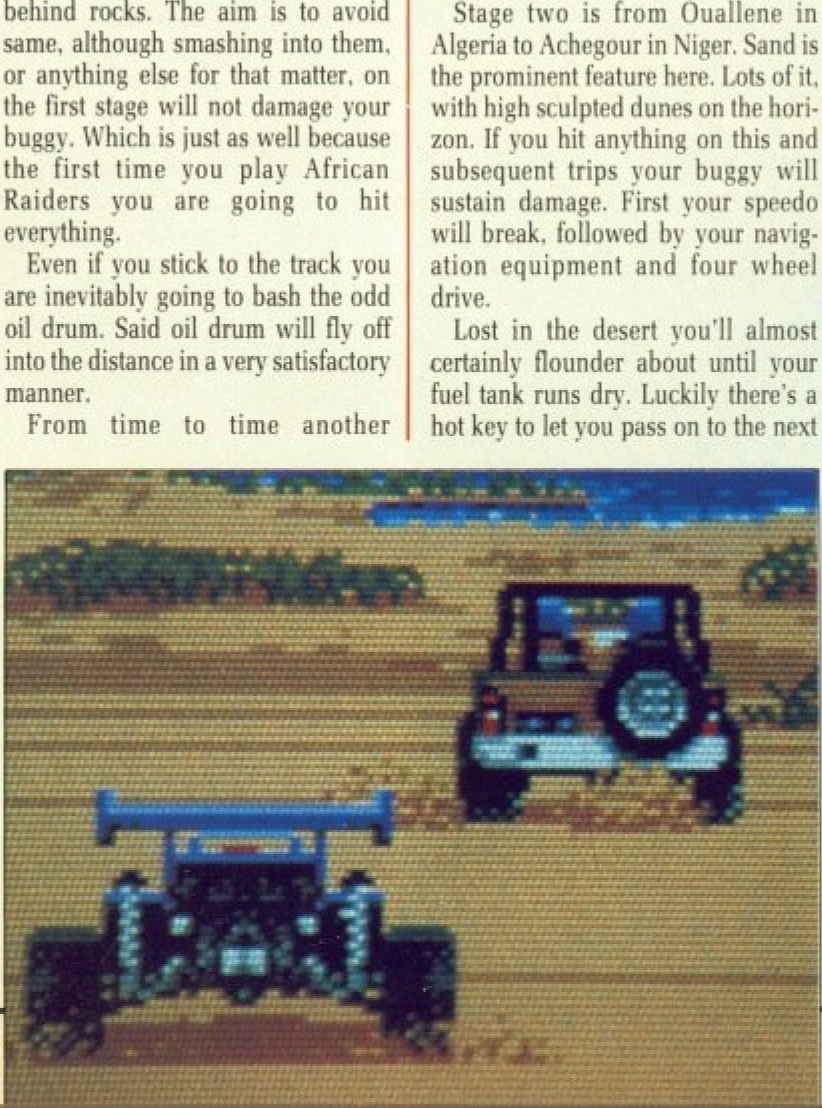
Nomadic settlements are represented by hordes of camels resting behind rocks. The aim is to avoid same, although smashing into them, or anything else for that matter, on the first stage will not damage your buggy. Which is just as well because the first time you play African Raiders you are going to hit everything.

Even if you stick to the track you are inevitably going to bash the odd oil drum. Said oil drum will fly off into the distance in a very satisfactory manner.

From time to time another competitor will appear in front of you, determined to stay there. Somehow you'll have to navigate around him without going too far off course.

Stage two is from Ouallene in Algeria to Achegour in Niger. Sand is the prominent feature here. Lots of it, with high sculpted dunes on the horizon. If you hit anything on this and subsequent trips your buggy will sustain damage. First your speedo will break, followed by your navigation equipment and four wheel drive.

Lost in the desert you'll almost certainly flounder about until your fuel tank runs dry. Luckily there's a hot key to let you pass on to the next stage, although you'll suffer severe time penalties for doing so.



The third stage is a race across Niger to Niamey. The scenery changes, the hazards remain the same. But there are more of them. The gameplay is accordingly more difficult.

On to the penultimate stage from Ouagadougou in the starved country of Burkina Faso to the capital of Mali, Bamako. This is the easiest level to navigate because the two towns are at the same latitude.

Set out north for one square and then turn left on to a heading of 270 degrees and you can't fail to rejoin the track just north of the finishing line. This route also happens to be inundated with hazards. Shucks, foiled again.

The final stage is an inspired dash for Dakar, pushed on by the vision in the distance of a sparkling sea between tree dotted hills.

If you study the map hard enough you'll see that each stage has an optimum route. It may look like a long haul, but because you can keep the speed up you'll get there quicker.

To cross the finishing line you have to rejoin the track at some time, where you'll be rewarded by the sight of a helmeted local waving the chequered flag at you.

African Raiders is not a difficult game, but it's best played by two – one to steer, one to navigate and shout instructions. Playing on your own you'll have to pause frequently to consult the map. Unless you stick to the track. In which case you'll miss seeing the camels and oil rigs and skeletons and wrecked cars.

Instead you'll have to deal with tight bends and oil drums and wandering nomads who get very annoyed when you run them over. Either way, it's a lot of fun.

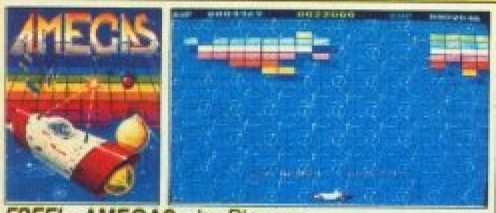
Jeff Walker

African Raiders
£19.99
Tomahawk

Sound
Graphics
Gameplay
Value

Overall – 79%

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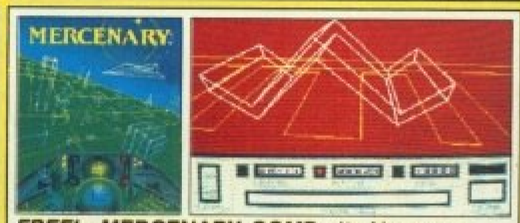
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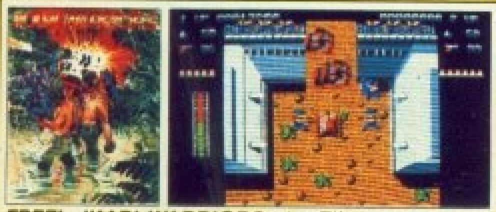


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MILLENNIUM 2.2

Get in shape for Armageddon

ONCE I attended a lecture by a well known professor of astronomy who prophesied that hellfire and brimstone will soon be upon us. The Solar System is surrounded by a shell of material known as the Oort Cloud from which comets probably come.

Every 30 million years this cloud is perturbed by something massive, with the result that a great hail of debris rains down on the Sun. Some hits Earth, which explains the Ice Age and the extinction of the dinosaurs.

To compound the danger there are no less than 40,000 asteroids whose orbits cross our planet's path. The learned gentleman concluded that Earth was due to be done in within the next 30,000 years and that all nations should forget such trivia as defence spending and the International Monetary Fund and instead club together to build a filthy great laser to zap any lumps of rock that come too close.

And you thought computer games were abstract and had nothing to do with real life.

According to Electric Dreams, the end of the world will be rather earlier than expected: 2,200 AD. Some people, including yourself, will have escaped to the Moon where your task will be to colonise the Solar System.

The ultimate aim is re-colonising Earth, using various pieces of equipment to extract useful material from the Moon's crust. With this you will make craft which can be sent to the asteroid belt for more materials with which to build the ships that can colonise worlds.

The main screen shows a grandiose 3D view of the planets moving around the Sun. Clicking on a planet zooms in and shows its moons. Clicking again shows whether the planet is colonised and, if it isn't, whether it is worth doing so.

There is a row of icons across the top of the screen, the most important being the Moon base. Here you start with nothing save a small stock of minerals and a little power from a generator. You begin by researching and building a larger generator, which allows you to produce more power and thus turn on your mining equipment, which allows you to dig for the raw materials which you need to produce even bigger generators, which give you enough power to build craft that can leave the Moon's surface and report on other planets, which allows you to build life support systems....



The asteroid belt is a good source of new materials

Pretty soon, you have a beehive of activity, with all sorts of things being built and several expeditions to other planets going on at the same time. There is a save option, which is welcome, because a single game can easily take days.

Needless to say, everything doesn't go smoothly. If you build too many generators too quickly they will explode and you will have to start again. You have Martians as enemies and will often have to defend against them. But no two games are the same, and you may well manage to get probes off the ground before threats are sent over the electronic bulletin board.

As a games reviewer you quickly learn to detect an ST port with your eyes closed and fur on your tongue. Millennium 2.2 is yet another. Basically, it is is an infinitely expanded variant of Kingdom, the golden oldie which had you balancing the books of an ancient dynasty while ensuring that the population didn't get too restless and depose you. But the good presentation and huge variety of options brings it bang up to date.

Despite the could-do-better graphics and sound, plus the extremely terse instructions, Millennium 2.2 is a surprisingly addictive game. It grows on you, provided you stick with it. It should keep you frustrated for months.

Alastair Scott

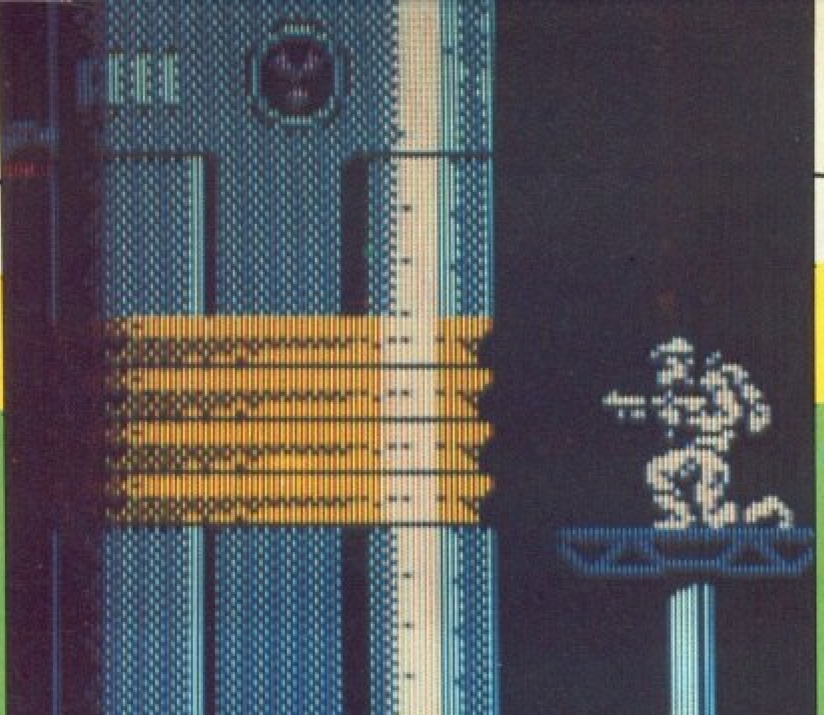


The graphics are good, but they could have been so much better on the Amiga

Millennium 2.2
£24.99
Electric Dreams

Sound
Graphics
Gameplay
Value

Overall – 72%



NAVY MOVES

Sub standard shoot-'em-up

THIS is possibly the world's longest delayed game. Previewed shortly after Army Moves and before Game Over, it promised fabbo graphics and Dinamic gameplay – sometimes frustrating, but ultimately rewarding.

Behind the facade of perestroika, them Rooshians have been building a submarine of such hugeness that it alone would be capable of holding the Free West to ransom.

This just isn't cricket, so you, as the predictably skilled aquatic assault commando, have to get aboard the sub, kick some Red ass and blow the thing out of the water.

You have plans of the sub and you can have a good laugh at repressed Commie ineptitude. The sub's main weapons are radar guided nuclear torpedoes. Yet, curiously, there are no torpedo tubes.

Using radar from a sub is similar to raising a pink, mile-high hoarding above the ship, saying: "Yes! It's a submarine!". A bit of a giveaway, to say the least. Not as much as the lack of a rudder, or the designers being St. Stanislav's Institute. And what did that Marx chap say was the opiate of the masses?

The area around the sub's base is littered with mines, which blow your little boat skywards and cause a typical Dinamic go-all-the-way-back-to-the-beginning.

After that it's a confrontation with Reds on jet-skis. Once past them it's a quick swim down to the underwater entrance to the sub base, braving hungry sharks. They're not Pinkos, by the way – they just know a good meal when they see one.

Once into the base you must steal the assault bathyscaphe – the only means of getting to the sub. In the bathyscaphe, giant octopi and sea monsters are rather keen on Tinned Person and will do anything to sample that particular delicacy. Once past these delightful beasts you are given an entry code for part two of the game. Glad to see that the old Dinamic values still hold.

The second phase takes place in the sub. You must halt the sub, enter the reactor bay, plant a small bomb, transmit an arming code and then get out very, very rapidly.

You need to cajole – at gunpoint – members of the crew to do things for you, such as shut down the engines, open the reactor bay doors and do the final transmission.

To make your day pleasurable, marines will shoot at you – a service extended to only the most favoured customers.

Navy Moves boasts possibly the most teeth-grindingly irritating tune, which seems to be composed of three sampled riffs repeated as often as is electronically possible. It plays very

PHOBIA

Everyone's scared of something

Phobia
£19.95
Imageworks

Sound
Graphics
Gameplay
Value

Overall – 76%

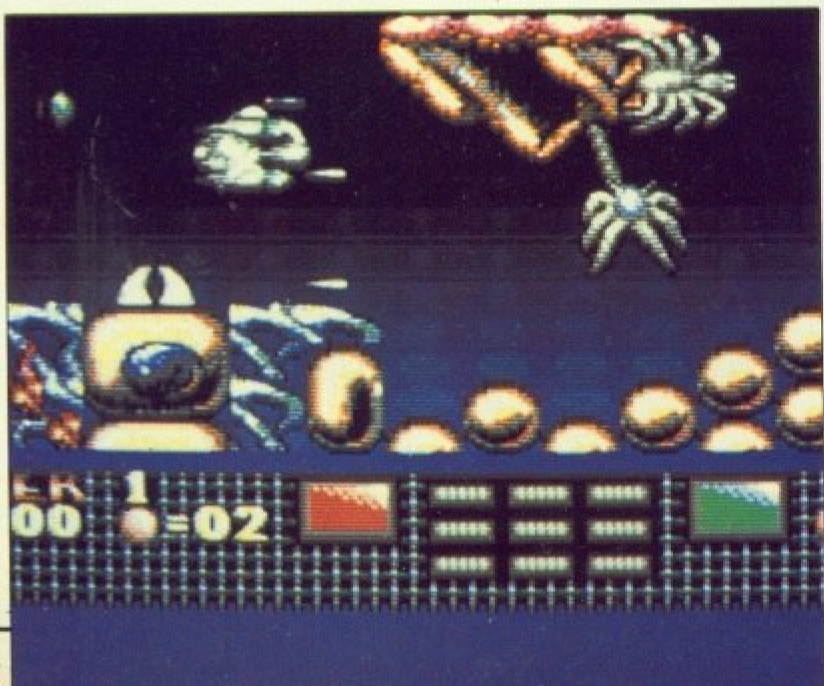
TELL me about your childhood. Did you tease your mother? Did you tease your cat? Did your cat tease you? The answers to these and other questions will probably not be answered by playing Phobia.

But if you have any deep-seated illogical fears about ice cubes or spiders, be prepared to have them exposed before your peers.

Here is the plot: A bad guy has kidnapped someone important and is holding him for ransom on the surface of the Sun. In order to prevent anyone (you) from liberating them he has converted all the planets in between into a realisation of Dante's worst nightmares, populating them with the kind of things people are most scared of.

All the big phobias are represented, although my personal phobia, baldygitophobia, doesn't seem to be present.

The game takes the form of a sort of Scramble affair, piloting your craft through a scrolling landscape of the fears of your choice. On the Arachland planet you come across lots of spiders weaving killer webs and shooting at you. Believe me, if a teensy weensy garden spider scaqres you, then a 100 ft high mutated monster spitting molten death at you will send you catatonic.



As custom dictates, at the end of every level there is an even more horrendously mutated beast to eradicate. Little Miss Muffet watch out.

The thing that impresses me most is that all the different planets are not the same with new sprites loaded in, but vary considerably in their structure.

This makes it a thrill to progress to each new level and seek out strange new life forms.

People who were scared by Hitchcock's The Birds should steer clear of Ornitholand, as it is very reminiscent of the great man's masterpiece. It's funny, too – all the birds line up on telegraph wires to take shots at you.

As certain baddies are despatched to their resting grounds they leave behind them power-ups which,

Navy Moves
£24.95
Dinamic

Sound	
Graphics	
Gameplay	
Value	

Overall – 19%

quietly through one speaker while playing the game, so there's no escaping it.

The graphics in the first stage are very small and rather free from the ravages of detail. But then I've only seen the very first part of the first stage.

The truth is that even to an inordinately skilled gameplayer such as myself, Navy Moves is completely impossible. And because you go back to the start every time you die, it remains completely impossible.

The later stages, as far as I'm concerned – and probably you too – just do not exist. What a waste of time, money, talent, effort, packaging, trees (for the documentation) and plenty of other things which, off hand, don't spring to mind.

Stewart C. Russell

oddly enough, increase the power and death-dealing efficiency of your weapons. If you go on a mercy mission to an infested moon, you can pick up small orbs enabling you to run the gauntlet of the spaceways between planets. They also give you extra firepower, lending the game a sort of R-Type look.

Gameplay is strong and fierce; autofire is definitely recommended.



Phobia is structured to have a large strategy element to it. You can choose your own route through the solar system, thus avoiding any planet you feel too loathsome, but watch out for the evil armies of Phobos approaching from the other direction, seeking to cut off your route.

One of the stranger options is the hi-res mode. Yes, it does turn the interlace mode on giving extra high definition graphics, but it also cuts the play area to a minute fraction of the screen so you can't see what is going on.

The only possible criticism of the game is that it is terribly difficult. For experts like myself there is a "silly mode" which makes it even more impossible.

Overall, a game that strikes a rare balance between playability and impossibility, providing entertainment which gives it a long lifespan. Real value for money.

Green

LICENCE TO KILL

Can you make the trip?



IT seems only logical that the longest running series of films should create the longest running series of spin-off games. But whereas the films have generally deteriorated since Connery left – never mind Moore – it is interesting to note that the games have been getting better.

LTK boots up with a slightly impure rendering of the familiar Bond theme and a terrible digitised picture of Timothy Dalton. Terrible because it is quite lifelike.

Bond begins in a helicopter with Felix, the CIA agent, chasing the notorious drug baron Sanchez who is aboard a jeep. The object is to strafe the jeep and kill Sanchez. Fair enough. Things to watch out for are the occasional gun emplacement taking a shot at you, and telegraph wires.

If he survives to the end, James must jump out of the helicopter and pursue Sanchez on foot through a camp of enemy gunmen. This is easily the best part. It bears a resemblance to games like Commando, but is much more realistic – armed with a 15 shot per magazine Beretta, accuracy and fleetness of foot become more important than gung-ho doggedness.

Pressing the Fire button activates an aiming reticle and releasing it fires the shot. So Bond can fire in a different direction to that in which he is travelling. This can be a little difficult at times and unless you are good you will be full of holes before you have the bad guy in your sights.

Bond makes his way back to the chopper and pursues Sanchez's light aircraft. Here he must dangle out of a helicopter and attach a tow- rope to the plane before patriotically parachuting into the water below.

Now armed only with a knife, it's not enough just to stand and stare. He must dodge enemy patrols and board a seaplane by harpooning its floats. Simply climbing on board is not the Bond way.

The final stage involves jumping on to the roof of a 16 wheeler and wreaking havoc on the highway in an attempt to catch Sanchez's elusive missile-firing jeep. I'm convinced it's a major contribution to road safety.

Graphics throughout are pleasing, especially the animated end sequences to each stage which give you the feel that you are playing a complete game rather then just several little ones tagged together, like the earlier efforts in the series.

The sound effects are minimal so turn the volume down and jack up Gladys Knight on your turntable.

It is easy to say that with Domark's monopoly on the Bond series, it doesn't so much have a licence to kill but a licence to make a killing.

To be fair, Domark now seems to be relying not so much on hype but more on decent coding to sell its wares. Gameplay has improved to the point where the nostalgic among you may mentally intone "I think he got the point" in a fake Scottish accent as a baddie gets harpooned.

A definite improvement on earlier tragedies.

Green

Licence to Kill
£19.99
Domark

Sound	
Graphics	
Gameplay	
Value	

Overall – 59%

COMMODORE 64s are best programmed by using assembly language to poke hardware registers. The Amiga is not a C64, and the best way of programming it is by going through the operating system, *not* by breaking the rules and "hitting the metal".

The Amiga has an exceptionally well designed operating system. I don't mean AmigaDos here, which is the file system and process manager written by Metacomco, a fairly small part of the overall system which no one is very happy with.

By operating system – OS for short – I mean the libraries and devices AmigaDos rests on, right down to Exec – a very fast, very tight and in my opinion very beautiful bit of assembly code which controls management and task switching.

The lower you go in the OS, the cleaner things become. This is in stark contrast to nearly all other systems, which are designed like Blackpool – all shining lights along the front, lots of propped-up grunge behind.

Going lower in the OS can be taken to an extreme, to the hardware level. Having started with an Intuition screen, you can go lower to the graphics library, lower still to direct memory access (DMA) to the screen, and even lower to direct hardware access to things like the blitter, provided you ask the OS first and give it back when you've finished. Going to the hardware by way of the OS gives *no* performance disadvantage over throwing it away.

The ultimate cads are the programmers who can't keep to the rules in the hardware manual, the ones who say things like: "Oooo, I can make my disc go faster than this – what a wonderful copy protection scheme I can implement". This goes past bad manners into the world of outright idiocy, because you can't rely on all machines being exactly the same.

Why are there still programs – not all of them games – which don't take advantage of the OS? And why are there still silly kids who think that breaking the rules is somehow macho? The three most commonly heard answers are performance, memory and portability.

The performance argument is largely rubbish. You can go as low as you like in an OS-legal manner, you don't gain anything by throwing it away. It can be argued that killing Exec loses the overhead of task switching, but as I discovered doing timing experiments for the BBC Emulator, this is only a few per cent. If task switching is really a problem, you can turn it off for as long as you like without breaking the rules.

The memory argument is better. The operating system does take up a lot of ram and there may be cases where complex games need to fit into an unexpanded Amiga.

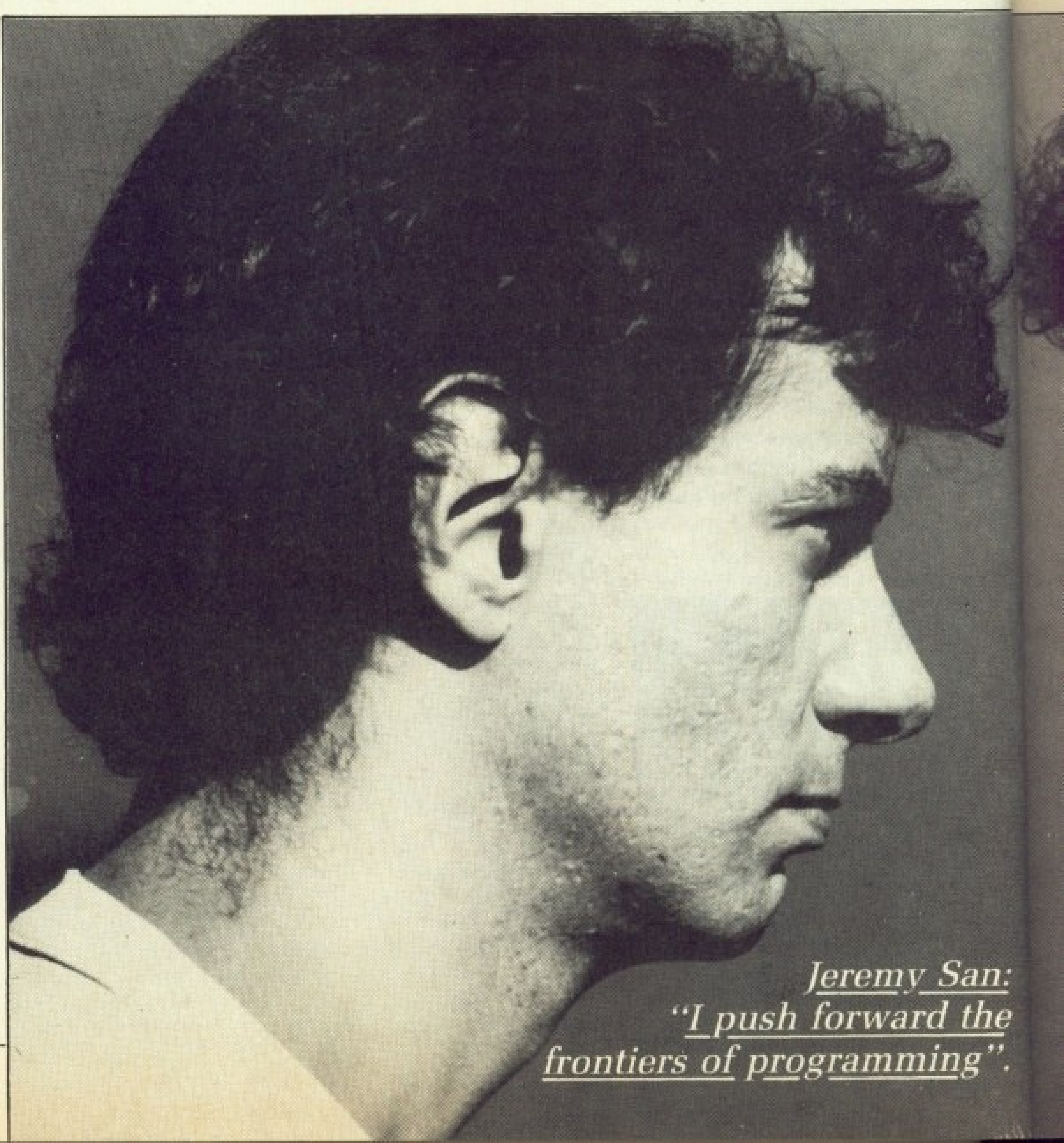
There are two arguments against doing this. By ditching the OS you are throwing away 256k of rom code, much of which is very tightly written. Does it make sense to write your own text routines for high score tables or serial port routines for the user-to-user option?

The second argument is that AmigaDos supports an overlay structure – you don't have to have all your program in memory at once. Multi-tasking means you don't even need to slow action for disc access.

Portability is the best argument of the three. If you rely on the Amiga's operating system you are going to have trouble porting to a more primitive machine. From this angle it makes sense to ditch the OS. Not the way to get the best out of the Amiga, but it may be the best way to make money.

Whatever it takes to get results is the best way to program the Amiga.

Head



Jeremy San: "I push forward the frontiers of programming".

to Head

Jez San co-wrote Starglider II. Dave Parkinson co-wrote the BBC Emulator. Dave thinks AmigaDos is beautiful, Jez claims it is a waste of space

There is no point in poking the registers if the program could have been written without such cad-like practices, but it is not always possible to write fast arcade games which are also system friendly.

Listen not to those who cite Exec as an example of what the Amiga rom is like. Exec is beautiful, but provides no features a game programmer would want. And it's only 8k, hardly a dent in the 256k KickStart rom.

I don't believe in religious programming practices, I believe in innovation and originality. You don't get that if you follow what some have done and others will tell you to do. I certainly don't agree with windbag preachers who have never tried to write an arcade game and who are convinced that it would be as good, or as fast, were it written using the OS.

When I break the rules, it is the operating system rules only. I never condone hardware rule-breaking. That's for prats.

Games have to be targeted at the games-playing public. These folk don't have hard discs, extra memory and turbo speed-up boards. Pride means I cater for them, but I have to optimise my code so it runs perfectly well in 512k with one drive.

AmigaDos is not memory efficient. Exec takes up 42k with system variables and 16k for each drive connected, Workbench takes up 32k for its screen and then eats more for windows. What I really need is a *GiveMeMoreMemory* OS call which would ask the machine to go to sleep while I took advantage of all the resources. When my game finished I would call the OS routine *WakeUpI'veFinished* and it could have all its memory back again.

A 512k ST has more memory free without having to take over the OS, so a ported game won't fit into the Amiga's 400k. If they cut bits out of the game to fit it in, loud-mouthed ST users would claim their machine was superior because Amiga games have to be chopped up before they fit into the machine.

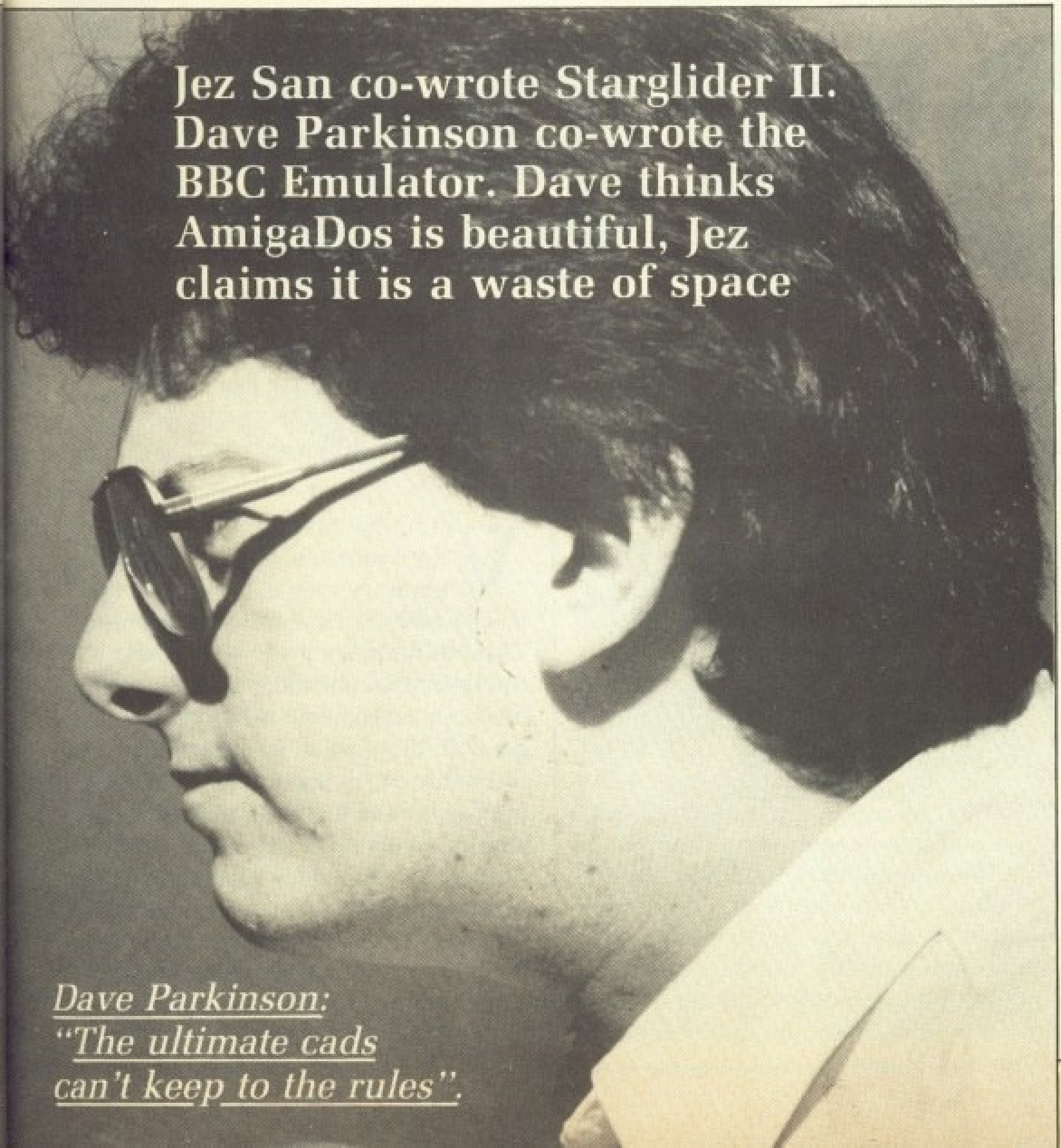
SO apart from memory space, why do programmers take over the machine? It's mainly for speed. Games are only enjoyable when they respond quickly, sluggish controls make for unplayable, jerky games.

The Amiga OS is designed to be very useful to the largest cross section of the Amiga programming community. As a result it is a compromise. There's C there, so it's not fast enough for realtime 3D flight simulators or superfast shoot-'em-ups. Lets face it, the arcade playing public wants *fast* arcade games. They don't need to be legitimate, just fast – faster than the OS can provide.

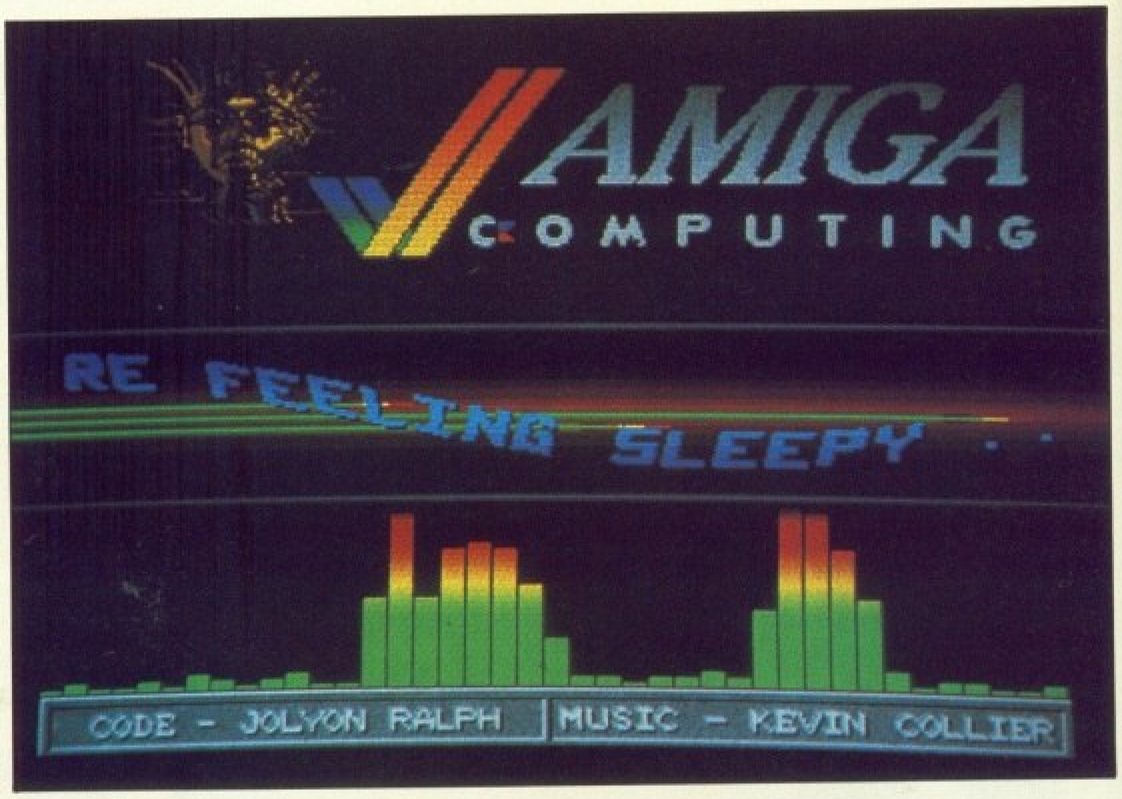
It is possible to write custom text and graphics on the Amiga and not break the rules. I use routines such as these for ArgAsm – the Argonaut Assembler – to get them relatively fast, but they are still *legal*. Preachers will tell you anything you want to do can be done legitimately by going lower in the Amiga OS. That's a lie. You can't go low level, you can just go relatively low.

The exceptions are the blitter's OwnBlit and DisOwnBlit functions, only a fraction of one of the chips. What about the copper, audio, timers or any of the other custom chippery?

Audio DMA is an area where the Amiga OS does not provide enough support. Games want to mould samples in realtime. All the Audio.Device can do is repetitively play memory hungry samples. Legitimate programmers have no way of reinstating values in write-only or read-and-forget registers. I do, and by breaking the OS rules I push forward the frontiers of creative programming.



Dave Parkinson: "The ultimate cads can't keep to the rules".



Zowee!

If you've run the demo on our cover disc this month you'll want to know how it's done. Jolyon Ralph, its author, begins a series of articles on advanced machine code by showing you how to use copper lists

LOTS of articles and books have been published on Amiga 68000 programming but many readers wanting to learn how to write arcade games or other graphics-intensive software to use the Amiga's custom hardware properly have been disappointed.

Accessing the hardware directly is less confusing than using the built-in library routines. If you have programmed on the C64 or another 8 bit computer, you may be a little put off by all the Libraries, Rastports, Viewports, TmpRastPtrs and BltitMapRastPorts.

But the good news is that if you program the hardware directly it is only slightly more complex than programming your trusty old 8 bit machine. It has the advantage that you are using 68000 machine code, which has to be the easiest to use of any processor.

The other major advantage is speed. If you want to write a game using library routines, forget it. They have two speeds – dead slow and stop. Library routines are fine if you're writing the latest accounts package where graphics are not important, but not for anything that needs speed.

One of the most confusing aspects of the Amiga to programmers who are new to 16 bit machines is the way that nothing in memory seems to be fixed. On old 8 bit machines you had a fixed screen address, fixed Basic program area and so on, but on the Amiga you open the techy books and what do you see? Nothing is fixed except this one magical thing called EXECBASE.

Well that is not strictly true. The rom is fixed in memory, but don't call rom routines directly from your programs because the addresses change with different versions of Kickstart.

IF you want to study the source code for Jolyon's Zowee! demo, you'll find it in a file in the DEMO-SOURCE directory under the filename SOURCE.ARC. The ARC program is in the same directory. To un-ARC the files use:

```
ARC -X SOURCE
```

There is a READ.ME file in the archive which describes the contents. You will be able to load this, and the source code, into any text editor or wordprocessor.

VAST portions of the Amiga's memory map are assigned to things called CIAs and custom chips. This has nothing to do with shady US operations in Central America or designer takeaways, but quite a lot to do with the myriad of extra chips that were thrown in the Amiga to ease the burden on the 68000 in its efforts to communicate with the outside world.

The CIA chips look after everything from reading the mouse to controlling the disc drives. The custom chips – Paula, Fat Agnes and Denise – handle all the sound output, video display and graphics manipulation (the well-

famed Blitter).

The area allocated to these chips is neither ram nor rom; the address lines are connected directly to the chips. This can be confusing because a lot of the registers contained in the custom chip area are Write Only – you can write a value to it but you can't read it back.

The custom chip memory consists of about 200 hardware registers. Most of these can either be set (Write Only) or read (Read Only), and it is by using these hardware registers that you can set up a screen, scroll it with the blitter, move some sprites and play some sound in the background.

These registers start at memory address $dff000. They are all two bytes long and therefore start on even addresses. Some are relatively simple to understand. For example, $dff180 is the hardware register where the background colour is stored. Some are more complex, needing separate bits to be set or cleared for an action to take place.

You can write to these registers with the 68000 or even from Basic using POKEW, but the best way to write to them is by using one of the Amiga's special co-processors, the Copper.

This co-processor runs a program called a copper list, which is written in copper code. Original, eh? Don't worry about having to learn yet another language, copper code only has three instructions, and one of them is hardly ever used.

The first copper instruction is CMOVE. All it does is move a value into one of the hardware registers. For example, *CMOVE ($180,$888)* would move the hex value $888 into the hardware register at $dff180. This would turn the screen grey.

The second instruction, CWAIT, is much more interesting. It waits for the video beam to reach a particular position on the screen before executing the next copper instruction. This has the format *CWAIT (position-word,mask-word)*.

The *position-word* consists of two bytes. The first is the vertical wait position, the second is the horizontal wait position. This word must always be odd to identify it as a CWAIT instruction.

The *mask-word* defines the accuracy of the CWAIT instruction. In general use it will almost always be set to $fffe. This word has to be even.

A copper list has to be arranged with its CWAITs in the correct order because it can't wait for a position higher than the beam has already reached.

The third copper instruction, which I have never seen used anywhere, is CSKIP. This is implemented in the same way as a CWAIT instruction except that it will skip over the next copper instruction if the beam position is greater or equal to the specified position.

When you're writing a copper list you store it as hex data in DC.W statements – CMOVE, CWAIT and CSKIP are not 68000 opcodes, they are co-processor instructions. See the *NEW:* label in the listing above for an example of how it's done.

Now you know how the Amiga can have several screens of different resolutions and colour palettes open ▶

CMOVE ($100,$0200)	This sets up the screen as a lo-res zero-bitplane screen, in other words, no screen at all. Otherwise you will get lots of weird rubbish all over it.
CMOVE ($180,$0)	Move $0 into $dff180. This turns the screen black.
CWAIT ($b009,$fffe)	Wait for the start of scan line $b0. NOTE: The scanline starts at a horizontal position of $09, not at $01 as most books tell you.
CMOVE ($180,$f00)	Move $f00 into $dff180. This turns the background colour black.
CWAIT ($ffff,$fffe)	This is an impossible wait position and is used as the CopperList END statement.

This copper list will turn the top half of screen black and the bottom half red.

```
** Must be run in chip memory.
** Use SECTION COPTEST,CODE_C in Devpac 2.

OpenLib equ -552        ; Offset for OpenLibrary.
CloseLib equ -414       ; Offset for CloseLibrary.

MOVE.L 4.w,a6           ; Get EXECBASE (Starting point for all
                        ; amiga library routines).
LEA GFXNAME(PC),a1      ; Point to "graphics.library" string.
MOVEQ #0,d0             ; Do not check version number.
JSR OpenLib(a6)         ; Open the library.
MOVE.L d0,a1            ; Store library address so we can close it.
MOVE.L 38(a1),OLD       ; OLD now contains workbench copper list
                        ; address.
MOVE.L 4.w,a6           ; Get EXECBASE (again).
JSR CloseLib(a6)        ; Close the library.

MOVE.L #NEW,$dff080     ; Put the start address of our
                        ; new copper list into hardware
                        ; register COP1LC ($dff080).

LOOP:
BTST #6,$bfe001         ; This is a test for the left mouse button.
BNE  LOOP               ; It will continue looping until pressed.

MOVE.L OLD,$dff080      ; Restore old copper list.
RTS                     ; Return to workbench.

NEW:                    ; This is our copper list.
DC.W  $100,$0200        ; Data for CMOVE($100,$0200).
DC.W  $180,$0           ; Data for CMOVE($180,$0).
DC.W  $b009,$fffe       ; Data for CWAIT($b009,$fffe).
DC.W  $180,$f00         ; Data for CMOVE($180,$f00).
DC.W  $ffff,$fffe       ; Data for CEND (CWAIT forever).

OLD: DC.L 0             ; Space for old copper list address.

GFXNAME: DC.B "graphics.library",0
                        ; End of listing.
```

Setting up a simple copper list

◄

at the same time. It sets up the first screen, uses the copper CWAIT instruction to wait until the scanline has reached the next screen, sets that screen up, waits for the next screen, sets that up... It's all done with the copper.

Look at the the simple copper list in Figure I. It turns the background colour black, waits until the middle of the screen, and then turns the background colour red.

To get your copper list running, stick it somewhere in chip memory and put the address into a hardware register called COP1LC ($dff080). You should then see your Workbench screen disappear to be replaced by your own copper list.

Great, a nice black and red screen. But how do I get back to my Workbench? Well, when you've set up your copper list Workbench will still be running, but you won't be able to see a thing. This is because Workbench has its own copper list which sets up its own screen. When you write your copper list address into COP1LC you write over the value that Workbench initialised it to.

Unfortunately this initial value changes depending on what size memory you have, how many drives you have, whether there's an R in the month... Remember, almost nothing in the Amiga is fixed. And don't forget that you're writing to a hardware register so you can't read the value from it first.

YOU would think that the Amiga designers would have saved this address in some easily accessible place so you could restore normality with some ease after running your program. Oh no, they hid the value in the middle of a long and complex structure that you have to open the graphics library to find.

Don't worry if you can't understand how it works, the structure was written to be simple for C programmers. Or was that written in C by simple programmers?

Study Listing I, which it sets up a simple copper list and waits for you to press the left mouse button. Then it restores the old copper list and returns you to your assembler.

Try experimenting with different values for CMOVE and CWAIT in the copper list table. Change the $b009 value in the CWAIT instruction to $9009, for example, and see what happens. A German flag should be quite easy to create. Lots of games use the copper to create good sky effects.

The cover demo this month uses the copper extensively. The list is five pages long. It sets up four separate screen areas – one for the logo, one for the scroller, one for the spectrum analyser and another for the name panel at the bottom.

The copper is used to create the blue stripes behind the logo, the red bar the scroller goes over, the two grey bars and the different colours inside the analyser. The *Amiga Computing* logo is moved from side to side by altering values in the copper list.

● *Next month:* Setting up a screen.

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		RRP	Member
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TOUCH OF Class

John Kennedy shows the Wimps way to Cordon Bleu menus

HOW do you pronounce Amiga? I only ask because several people I know – the editor of *Amiga Computing* for one – pronounces it Am-ee-ga and both Green and myself pronounce it Am-aa-ga. With my regional accent it probably sounds like Armahgar.

The computer, when asked, will consult its Workbench disc and say Am-ee-ga using its wonderful built-in speech synthesiser. Well it sounds to me like Am-ee-ga, but I suppose it could be anything from Syntax Error to Gottle of geer.

A lady from Commodore who spoke to me on the telephone pronounced it Am-aa-ga. Let me know how you say it.

The Armahgar computer is famous for its Wimp programming environment. Pseudo computer intellectuals love to explain how the Wimp system came about and will mutter words like Xerox, Palo Alto and Macintosh. These people are all wrong, especially if they tell you that Wimp stands for Windows, Icons, Mouse and Pull-down menus or even Windows, Icons, Menus and Pointers.

The first Wimp system was actually produced by Arnold Cringeworthy, a librarian in Uxbridge, Middlesex. Mr Cringeworthy was cataloguing the library's large collection of flower arranging books but found the huge number of keypresses tiring. He invented the menus and pointer concept one afternoon and then added the windows – with red and white striped curtains – because "they looked nice".

He had initial problems with the mouse, partly due to a lack of mouse mats but mostly because he was scared of it. Eventually, after weeks of trial and error and standing on top of tall stools, he had a complete working system which he sold to a well-known American company.

> *..that funny speckled grey that makes you think your eyesight is faltering*

This company, which shall remain nameless because we here at *Armahgar Computing* respect professional working ethics and are scared of lawsuits, was working on a

```
' Ordering from menus.
' (Two pints of lager and a
' packet of crisps please.)

  CLS
  GOSUB Define.menus
  delay=500
  process=0 ' Initially do nothing.
  ON MENU GOSUB Menu.handler
  PRINT "I'm bored. Do something!"
  '
  endless.loop:
  '
  ' Choose the process to branch to.
  '
  ON process GOSUB Count.numbers, Go.beep
  '
  ' If process = 0 nothing will happen.
  '
GOTO endless.loop

' --- The subroutines start here ---

Menu.handler:
  '
  ' Decide which menu has been selected.
  '
  which.menu=MENU(0)
  ON which.menu GOSUB What.to.do, How.to.do.it
RETURN

What.to.do:
  '
  ' Decide which process is to be done
  ' or whether to quit to Basic.

  which.item=MENU(1)
  ON which.item GOSUB Choose.beep, Choose.count, Quit
RETURN

How.to.do.it:
  '
  ' Choose the speed at which the processes
  ' are to be done.
  '
  which.item=MENU(1)
  ON which.item GOSUB Slow, Medium, Fast
RETURN

' --- All the different ways of doing things ---

Slow:
  '
  ' Remove the tick from Fast and Medium items
  ' and put a tick next to the Slow item.
  '
  MENU 2,1,2:MENU 2,2,1:MENU 2,3,1
  delay=1000 ' Set a large delay.
RETURN

Medium:
  '
  ' Remove the tick from Fast and Slow items
  ' and put a tick next to the Medium item.
  '
  MENU 2,1,1:MENU 2,2,2:MENU 2,3,1
  delay=500 ' Set a medium delay.
RETURN

Fast:
  '
  ' Remove the tick from Slow and Medium items
  ' and put a tick next to the Fast item.
  '
  MENU 2,1,1:MENU 2,2,1:MENU 2,3,2
  delay=0 ' Set a small delay.
RETURN

' --- Decide what is to be done ---

Choose.count:
  process=1:MENU 2,0,1 ' Switch on the "How to" menu.
RETURN

Choose.beep:
  process=2:MENU 2,0,1 ' Switch on the "How to" menu.
RETURN

Quit:
  MENU RESET:STOP ' Switch of menus and return to Basic.

' --- All the things to do ---
Count.numbers:
  CLS:FOR t=1 TO 10:PRINT t;:GOSUB Slow.down:NEXT
RETURN
Go.beep:
  PRINT "Beep":BEEP:GOSUB Slow.down
RETURN

Slow.down:
  FOR yawn=1 TO delay:NEXT
RETURN

' --- The menu definitions ---

Define.menus:
  '
  MENU 1,0,1,"Things to do"
  MENU 1,1,1,"Go Beep"
  MENU 1,2,1,"Count to 10"
  MENU 1,3,1,"Quit"
  '
  MENU 2,0,0,"How to do it"
  MENU 2,1,1,"  Slowly"
  MENU 2,2,2,"  Mediumly"
  MENU 2,3,1,"  Fastly"
  '
  MENU ON
  '
RETURN
```

Listing I

rival Butch operating system.

The Butch system involved head-butting the computer monitor to select possible options displayed on different styles of beer bottles. Playing games with it rapidly led to brain damage. It was doomed to failure.

ARMAHGARBASIC allows us to use the windows and menus of the Wimp environment from within our own programs. When done properly this gives homegrown programs a touch of real class. Using the MENU commands and functions is quite straightforward.

But be careful – it is easy to crash the computer if you define a menu incorrectly. Be wise and save your program often. It only takes a few seconds to do a SAVE or SAVE AS from the Project menu.

We are supplied with seven commands to control the menus. The syntax of the first is:

MENU *menu-id,item-id,state [,title]*

The *menu-id* is a number from 1 to 10 referring to the menu that you wish to pull down from the top of the screen. The Project menu is where menu number one will appear. Number 10 will appear on the far right.

The *item-id* is a number from 0 to 19. A value of zero means something special; it means you are referring to the title of the menu. A value other than that defines which item in the menu you are considering. An item could be a command such as "Clear the screen" or an option such as "Use the colour blue".

Now we come to the interesting one, the *state*, which takes a number from 0 to 2. Zero means switched off. If the item-id defined previously is zero, the entire menu is deactivated, otherwise only the relevant item in the menu is made unavailable. This unavailableness is indicated in the usual way by making it go that funny speckled grey which makes you think your eyesight is faltering.

"Using the menu command is straight forward"

When an item is like this it will not be highlighted when you point at it. A state value of 1 means the item in the menu is enabled, in other words you will be able to highlight it when you point at it. A value of 2 means the item is enabled *and* you get, at no extra charge, a little tick before the item name.

Because this little tick will take up two character spaces, you must leave two spaces blank before the item's name. Leave them out if you don't believe me.

The item's name – or *title* – is the optional last parameter in the MENU statement. This is how you name your menus and the items inside when you first define them.

When your program wants to change the state of an item – for example, switch an option off or on – you will usually leave the name out of the parameter list. Of course, there is no reason why you can't rename the items or menus by supplying a new name.

As you will have no doubt discovered while using the Armahgar, the pointer can be moved around the screen more or less independently of anything else which is going on. ArmahgarBasic makes use of this to allow the windows to be selected no ►

◄

matter what your program is doing at the time.

As long as your program can handle all the possible menu options, everything will proceed as normal. But first you must tell ArmahgarBasic to only service the menus whenever it has to by using the ON MENU GOSUB feature.

By putting ON MENU GOSUB *label* at the start of the program, the flow of control will only jump to *label* whenever the user makes a selection from the menu. It is up to the Basic code following this label to discover which menu has been pulled down and which item in the menu has been selected. At this point the program may decide to alter the start of some of the items in the menu by adding or removing the tick, or even by making the item go all grey, bletchy and unavailable.

"Windows can be selected no matter what your program is doing at the time"

To discover which menu and which item have been selected make use of the MENU(0) and MENU(1) functions. MENU(0) will return the number of the menu, and MENU(1) the number of the item, which has been requested.

Which leaves us the remaining four menu commands: MENU ON, MENU OFF, MENU STOP and MENU RESET.

BEFORE your program can access the menus they must all be switched on by using MENU ON. This allows the ON MENU GOSUB to function as a background task in your Basic program. The computer gets on with the job of running a Basic program, but it is also keeps an eye out to see whether anything else is happening. It is as though it was watching television and waiting for the front door bell to ring.

Sprites and Objects can also be set up to cause events. We may look at this in the not too distant future.

MENU OFF will stop the event trapping. Although you will still be able to access any of the menus, nothing will change. Another MENU ON can switch the event trapping back on again.

MENU STOP will temporarily prevent ON MENU GOSUB from working, but will remember if an item has been selected, although at the moment it will do nothing about it. As soon as a MENU ON happens the ON MENU GOSUB will start to work again, beginning with the item selected during the time that MENU STOP was in operation.

MENU RESET will clear away all your menus completely. If your program terminates without issuing this command, the menus created by ArmahgarBasic will be overwritten. I have yet to discover a use for this other than to confuse everything completely and stop me using the Cut and Paste facilities.

Let's take a look at the example listing. It is really only for discussion purposes, but feel free to type it in if you want – it does work. Besides, messing around with a program and running it is the fastest way to learn about programming.

Listing I wants to perform one of two trivial processes, either count from 1 to 10 or go "beep". A bit like Green really. The user may select which of the processes is to be used and can select the speed at which the computer will do them. A Quit option is included to provide a neat and tidy way of stopping the program.

Two menus are used, one called "Things to do", the other called "How to do it". The menus are all defined in the subroutine called *Define.Menus*.

Notice how the "How to do it" menu is initially switched off by defining its zero-eth state to be zero. This is because when the program starts execution it is not doing anything, so the second menu – which sets the speed of whatever is being done – is not relevant. Once the program starts doing something the menu can be switched on.

The program makes extensive use of the ON *expression* GOSUB structure. Do not confuse this with the ON MENU GOSUB statement – it has nothing to do with event trapping. ON *expression* GOSUB works by evaluating the *expression* to an integer value. If it evaluates to 1, the program branches to the first label in the list; If the value is 2 it branches to the second label in the list, and so on.

This is very handy, because both MENU(0) and MENU(1) return integers from 1 onwards. Thus the part of the program which says:

```
which.menu=MENU(0)
ON which.menu GOSUB What.to.do, How
.to.do.it
```

will branch to *What.to.do* if the first menu is chosen and to *How.to.do.it* if the second menu is chosen. Once either *What.to.do* or *How.to.do.it* are reached, a further ON GOSUB will determine the subroutine needed to handle each individual item, as in:

```
which.item=MENU(1)
ON which.item GOSUB Slow, Medium, F
ast
```

The first thing the subroutine which handles the slow item does is to switch off both the fast and medium options. Although only one of these was likely to be on, slow does not know which one, so it plays it safe by switching them both off and itself on.

If you are running the program, change one of the options and then pull the menu down again. The tick should have moved from beside one speed option to another.

"Messing around with the program is the fastest way to learn"

Remember that the text in the item names Slowly, Mediumly and Fastly starts with two blank spaces for where the cute little tick will appear. No such tick is provided for the different processes – Count to 10 and Go Beep – but there is no reason why you shouldn't add some if that is what you really want.

I apologise for the grammar. I don't think Fastly is strictly correct but my English teacher was very cute and I had other things on my mind.

Which brings brings us to the close of this month's look at ArmahgarBasic. What's on the menu for next month? You'll just have to wait and see. Bye.

What you'll find on our cover disc



Day by Day



DIGITA calls this program a life organiser, which is a posh way of saying diary-cum-year-planner. Using Day by Day is an absolute doddle, as easy as scribbling a note.

Firstly, enter the current date. If you have a battery backed-up clock, press Return once to accept the system date. Day by Day will then display your Urgent messages, Overdue messages and This Week messages.

Since you have not entered any messages at this stage, select Forward by pressing F or clicking on the F gadget with the mouse. This will step through the messages in the demo file one page at a time.

You can keep selecting F until the main menu appears, but this might be a good time to play with some of the other features. So stop clicking and look at the foot of the Day by Day window.

The gadgets there carry out all of the actions needed for editing, updating and browsing through your appointment book.

Prev makes the previous message the current (highlighted) message; use this to step backwards through the category one appointment at a time. Next makes the following message the current message; use this to step forward through the category one appointment at at time.

Add allows you to enter a new appointment; you will be prompted for the date and the message. Use Delete to remove the current message and Update to alter or edit the current message.

Backward moves to the previous page, Forward moves to the next page. Output sends the current screen to the printer and Exit returns to the main menu.

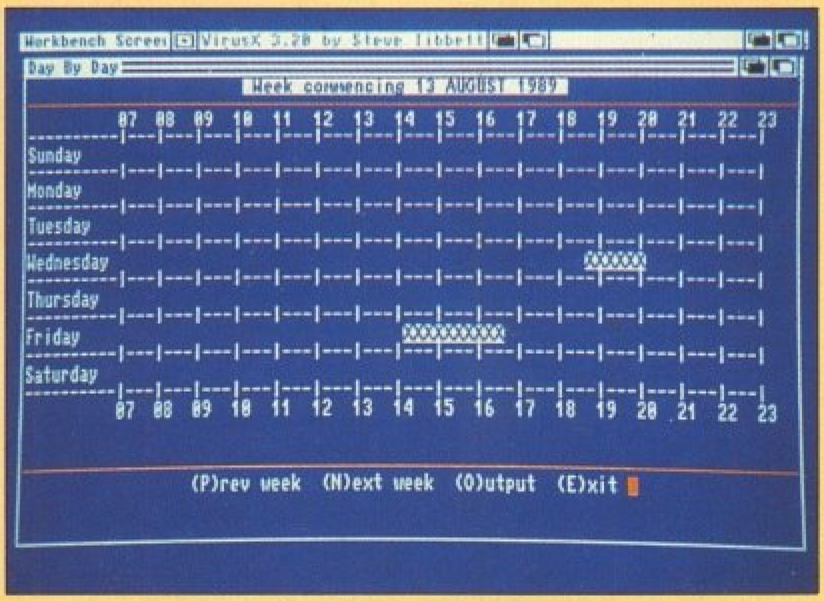
Go to the main menu now by pressing or clicking on E. See the Options sub-menu? For the hard of thinking, it's the second rectangle down on the right.

OK. This sub-menu is used to determine the details of the message. If you switch Duration on, when adding a message you will be prompted to specify the duration of the message or appointment.

Switching Range on allows you to enter the same message over a large number of days, which is ideal for regular meetings. Switching Time on lets you enter the starting and finishing time for appointments. The best way to see what effect these options have is to play with them.

Choose Change Categories (top rectangle on the right) if you want to add a new group or change the name of one. Day by Day will let you create categories numbered 1 to 9. Four are already set up in the bottom left rectangle.

When you select Quit you will be asked if you want to save the file. Press Y or N, it makes no difference, this demonstration copy of Day by Day has its save routine disabled. You'll have to buy the proper program if you want to create and save your own appointment book. In the meantime, explore and enjoy.



Hmmm, not a lot on this week. Must get in some golf practice

To load *Day by Day*, switch on your Amiga, put the cover disc into DF0:, click the left mouse button once to wipe out the Zowee demo and then double click on the CD002 icon.

When the disc window has opened, double click on the DIGITA drawer and then the DayByDay icon.

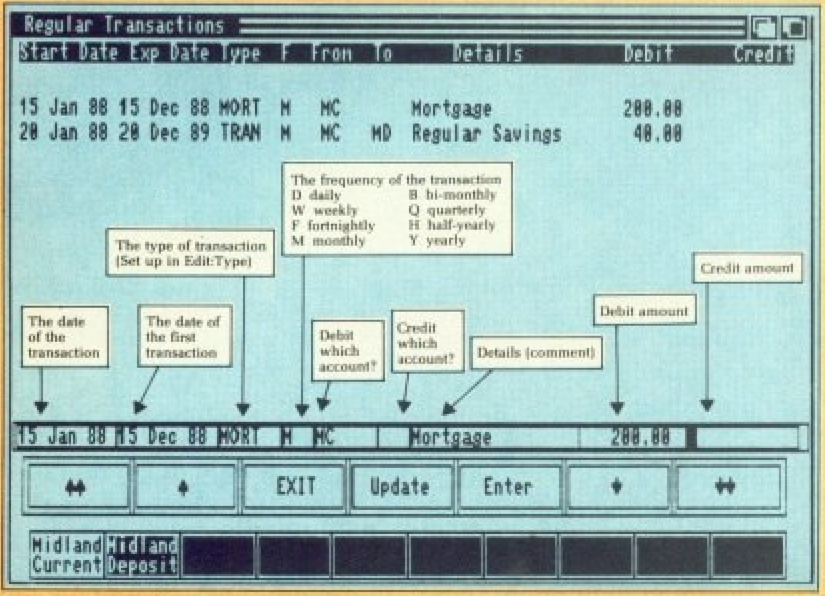


Figure I: Oh dear, another bad month.

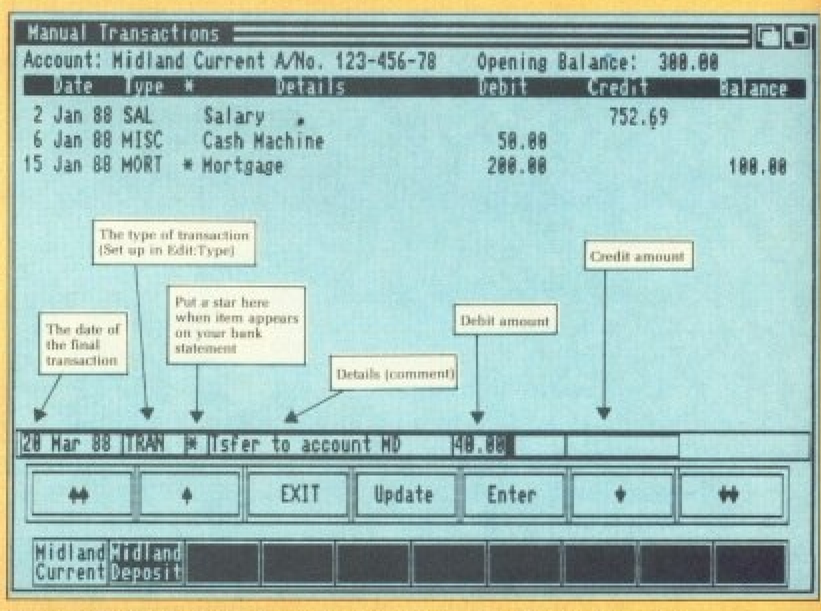


Figure II: Sigh. Just have to cut down the housekeeping

Home Accounts

LIKE all financial programs, Home Accounts will take a little getting used to. But just a little. Start by entering the date and time. For the purposes of this demonstration, enter 01-Jan-88 and click on OK.

The easiest way to see how Home Accounts works is to examine the structure of an example file, so select Load from the Project menu and Click on *demo.ha* in the file requester, followed by OK.

When the file has loaded two boxes will appear at bottom left labelled Midland Current and Midland Deposit. Click once on Midland Current. It will change colour to let you know that this is the account you are currently working with.

Now select Type from the Edit menu. This is where you specify your various kinds of income and expenditure. Each type has a code of up to four letters which will be used later in the program; you can add a fuller description to the right. Up to 60 types can be defined.

Click on Exit and then select Regular Transactions from the Edit menu. Your screen will look like Figure I. This screen is where you enter details of regular payments and incomes.

Two payments have been defined, a mortgage (MORT) of £200 per month and regular savings (TRAN) of £40 per month, which gets transferred automatically from your current account (MC) to your deposit account (MD).

Let's enter your salary as a regular income. Click on Enter until you get a blank entry on the edit line. You'll see the orange blob of the cursor in the far left edit box. Enter a start date of 27-Dec-87 and press Return. The cursor will move into the next box to the right. Enter an expiry date of 27-Dec-89 and press Return.

Salary has been defined as type SAL, so enter SAL in the type box followed by M for monthly in the Frequency (F) box.

The money is not coming from one of your accounts, so skip the From box and type MC into the To box, signifying that your salary gets paid into your current account.

Type "Yummy money" into the Details box, skip the Debit box and enter the amount of your salary in the Credit box. Be generous, this may be the closest you'll ever get to a six figure income.

Press Return to finish entering the transaction and you'll see it appear at the bottom of the list. If you have made mistakes, click on the transaction to get it on to the edit line, click on the box you need to edit and use the cursor and Del keys to amend the details.

Choose Edit Keys from the Help menu for more details on which keypresses do what. When you've finished editing, press Return until the edit line goes blank, or simply click on Enter.

Click on Exit to leave Regular Transactions and then on Edit Date/Time. You are going to make time pass quickly. Since you are just fooling around with the program, change the date to 01-Apr-88 and click on OK. Now go to the Account menu, click on Update, then select Manual Transactions from the Edit menu.

Your screen will look something like Figure II, except there will be more transactions. Notice that your salary (Yummy money) has been credited to you for each month up to the current one.

This screen is where you enter all transactions that do

MouseZoom

MOUSEZOOM is a public domain program by John Meissen which increases the speed of your mouse pointer. It works exponentially – the faster you move the mouse, the faster the pointer moves.

This gives you good resolution at slow speeds and still allows very fast mouse movement when you want it.

When you boot the cover disc MouseZoom is run automatically from our Startup-Sequence.

To get rid of it, double click on the MouseZoom icon again or issue a MouseZoom command from the CLI.

To transfer MouseZoom on to another disc you will be required to copy just two files, MOUSEZOOM and MOUSEZOOM.INFO.



To load *Home Accounts*, switch on your Amiga, put the cover disc into DF0:, click the left mouse button once when you've had enough of the Zowee demo and then double click on the CD002 icon.

When the disc window has opened, double click on the DIGITA drawer and then the HomeAccounts icon.

not happen automatically. If you spend out cash on a case of champers, enter the details on this screen. Here, too, is where you enter how much you paid off your credit card this month.

Enter a few. They don't have to be after the last date in the list, you can insert transactions anywhere in the list by entering them normally and clicking on Update, which will sort them into the correct date order. Select Sorting from the Help menu for more details on how to order your list of transactions differently.

Other things to play with are setting up a budget, filling in each account's memo pad – which is useful for remembering important phone numbers – and asking for reports.

The Report menu is self-explanatory. Explore it and have fun. Note that to get any sense from any of them, especially Budget Progress, you'll have to have entered a number of expenditures into to the Manual Transactions list. Don't forget to look at the Pie and Bar graph options.

When you come to quit Home Accounts will ask you if you want to save first. Click Yes if you must, but there's no point because the save routine in this demonstration copy doesn't work.

AMIGA COVER DISC

Win up to £1,000 !

We are looking for original contributions for the *Amiga Computing* cover disc. If you think something you have written or drawn is good enough to share with everybody else who reads the magazine, send it along and we will have a look. If we like what we see, it could earn you up to £1,000.

Please let us know if your submission needs any files from the Workbench disc. Programs which use the Amiga's built-in speech can be particularly greedy in this respect.

If your program is clickable from Workbench, feel free to design an original icon. In fact, we'll pay small amounts for good icons, even if there is no program attached. But don't make them too big. And please use the standard Workbench colours.

Bear in mind that a program which does not run on a 512k machine would have to be exceptionally good to make it on to the disc.

Please enclose this coupon, or a photocopy of it, with your submission. Include a file on the disc with full documentation, your name, address, phone number and a few details about you and your kit. Don't forget to duplicate on the disc label the program name, your name, address and phone number. If you want your disc back, enclose the correct amount in stamps.

Name.. Age........years
Address..
....
....
Daytime phone ....after.....am
Evening phone..after.....pm
Submission name..
Submission size..bytes in total

NOTE: We will accept submissions up to 500k in total length, including documentation. But the shorter your submission, the better chance it stands of getting on to the disc. If it is a compiled program, include all the source code, but do not count this in the size of the submission.

Write a brief description of your submission below. If it consists more than one file, describe what each file is for. Attach an extra sheet of paper to this form if necessary:

....
....
....
....

Sign this declaration:

The stuff on this disc is mine. I didn't nick it off someone else. It hasn't been published before and I haven't submitted it elsewhere because I want *Amiga Computing* to publish it.

Signed.. Date..................................

Post your submission to: Jeff Walker, Amiga Computing, North House, 78-84 Ongar Road, Brentwood, Essex, CM15 9BG.

Protext

EVERY word you read in this magazine has been processed with Protext. *Amiga Computing* uses two A2000s, and Protext is running within them 23 hours a day; well, you've got to load a game occasionally.

When you spend half your life in front of a word processor you get to know what you want. Protext offers it all. The main thing it scores on is speed. Thanks to being text, instead of graphics, orientated it can scroll, delete and insert words at a speed other wysiwyg word processors dream about.

We will be starting a series on some of the cleverer features within Protext next month, but for the moment you can experiment with the free version on the cover disc. This is the full working A500 version.

The main difference between what you have taped to the front of the magazine and the copy the shops sell for £100 is that the demo comes without a spell check dictionary and will only edit small files up to 2k.

The drivers supplied will work with most popular printers, and the demo Protext will save your files. So if you only want to leave a note to the milkman or compile a list of all the things an ST does better than an Amiga, you don't have to worry.

Before using the software in anger it is worth having a look at the rolling demo. This is impressive not only for what it says but for what it does. All the tricks used to make the text scroll, draw boxes and explain what is going on rely on Protext features.

Protext uses a command line, much like the CLI or Shell. In preference to a formal Intuition requester you type a command to load a file. You can switch between Command mode and Edit mode by pressing the Esc key.

Try it. When you have an > on the screen Protext is waiting to be told to do something.

Type PRINT and press Return to print the file you are editing. PRINT filename will send a file called filename from the disc to the printer.

There is a big instruction file called PROTEXT.DOC in the ARNOR directory, it might be useful if you print it out. New printer ribbons are available at £50 each from *Amiga Computing* readers offers....

Most of the commands have logical names and abbreviations. PRINT can be shortened to P, LOAD to L and SAVE to S. Commands don't have to be typed in upper case.

To read the directory type DIR. This will produce an AmigaDos-style List. Try CAT – or press F2 – for a different look directory.

Mastery of the command mode makes Protext very powerful and you very efficient. You can write programs using the command mode and mail merge languages.

To create a new document you don't have to name it, that only comes when it is time to save the file. Go into Edit mode so that the orange cursor appears at the top of the screen under the letter L. If through your earlier playing you already have some text in the document, go to the end of the text and hold down Del.



Online help can be a godsend for beginners



The File Manager option is reached by pressing Right- Amiga-C in Edit mode or choosing Catalogue from the Project menu.



Protext offers a more compact style of disc catalogue with file sizes given to the nearest kilobyte



There are quicker ways of getting rid of your prose, either press Esc (to go back into Command mode) and type CLEAR, or go to the beginning of each line and press Ctrl and E together. If you use Ctrl–E to delete, you can get the last line back with Ctrl–U.

> To load *Protext*, switch on your Amiga, put the cover disc into DF0:, click the left mouse button once to zap the Zowee demo and then double click on the CD002 icon.
>
> When the disc window has opened double click on the ARNOR drawer and then the Protext icon. After that follow the on-screen instructions.

Protext supplies online assistance by means of its HELP command. For example, type HELP FILES to get a list of all the commands to do with file handling. Type HELP SWAP to get a synopsis of the SWAP command.

The on-line help needs the COMMAND.HLP file, which in this demo version of Protext must be present in the root directory of the disc in DF0:.

This is just a very quick overview of Protext. A good way to explore the program is to take a trip around all the pull-down menus. There is much more to this word processor than we can possibly tell you about here. Do read the .doc file and have a look at the rolling demo – it takes more than an hour to complete.

● *If you have a vanilla A500 with no extra ram, the Protext rolling demo may not work correctly towards the end of its run, about 50 minutes or so into it. It may fail to load some datafiles, or it may hang altogether. Don't panic, it's just your Amiga's way of asking you to buy it more memory.*

The Zowee demo

WITHIN hours of our breaking the news of the (then) forthcoming cover disc at the Commodore Show last June, young males were coming up to us at our stand, winking and thrusting discs into our mits. One of those people was Jolyon Ralph, a dedicated insomniac and Amiga machine code programmer from Surrey.

Back at the office Monday morning (aches, pains, groan, put the kettle on, Rockman) we booted Jolyon's disc. We were impressed.

Just a few days later (it took us that long to get him out of bed) we commissioned Jolyon to write a special demo for *Amiga Computing*. Getting your name in lights and earning a few bob on the side is as easy as that sometimes.

So crank up the volume, sit back and enjoy. The music is by Kevin Collier, a professional computer games musician. His best Amiga effort to date is the soundtrack to Firebird's Savage, but a little birdie tells us he has something even better up his sleeve for the *Amiga Computing* cover disc.

As well as the demo, which you can't miss because it autoboots from the Startup-Sequence, we've given you the full source code. Word of which has already caused some concern in hacking circles.

They are not happy with us putting their assembly language secrets into the public domain.

Well they can lump it, because we'll be doing the same thing for the next few months as Jolyon uses our cover disc and the pages of *Amiga Computing* to educate you in the art of Amiga machine code, the sort of stuff "proper" programmers turn their noses up to in public while secretly hacking it to bits to find out how it's done.

The source code has been compressed into an archive file. See Jolyon's Zowee article for tips on how to UnARC it.



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"Trained Assassin is of a standard that could probably survive unaltered in a real arcade – few games could manage that". – ***Stewart Russel, Amiga Computing.***

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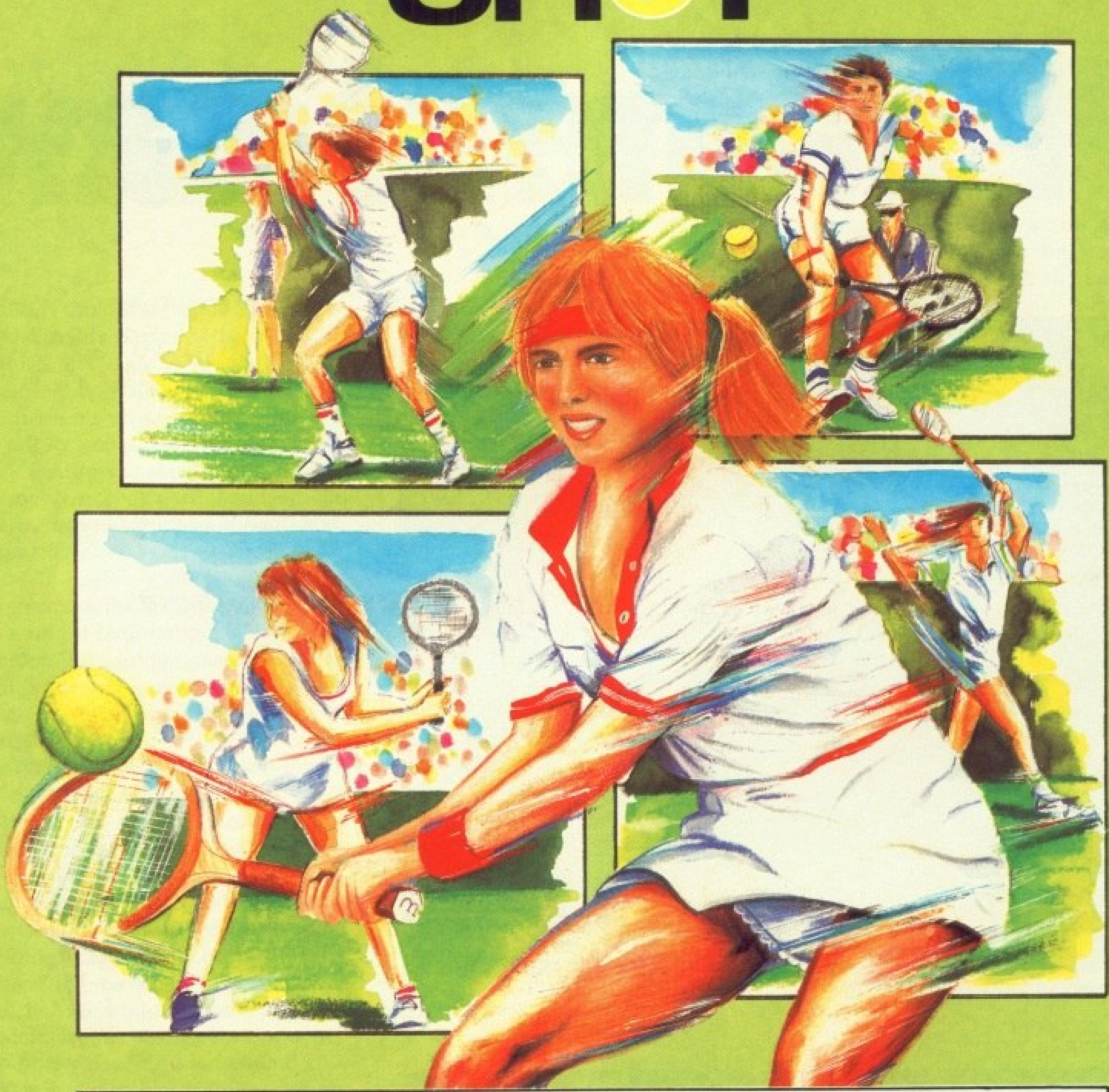
Skill and determination are the qualities you'll need in vast amounts if you're going to fully master this game.

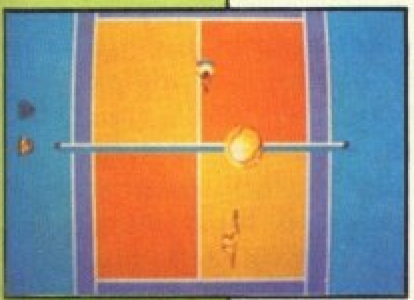
Your mission consists of collecting pods by hovering above them and switching on your tractor beam, but all the time you have to take into account the effects of intertia and gravity, controlling your ship as smoothly as possible – to avoid colliding with the planet below.

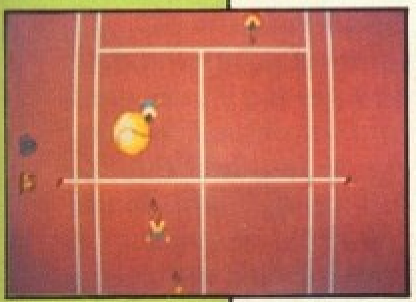
"The graphics are wonderfully drawn and smoothly scrolled in all directions. Every landscape is a joy to look at and explore... delicate, addictive gameplay". – ***John Kennedy, Amiga Computing.***

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I came, I saw, I



32 colour mode can give some interesting effects



Mirror, mirror, on the wall. . .

SITTING in your front room you probably have a video. Not far away sits your Amiga. The Amiga is playing games and the video playing Neighbours, but never the twain shall meet. It might be the cost of the extra bits, or the complexity of the connections, but desktop video remains the province of the seriously keen. Perhaps SuperPic will change all this.

SuperPic, from JCL Business Systems, is a combined digitiser and genlock. It can capture full-colour live video signals from a camera, camcorder or video recorder, and turn them into Amiga pictures – digitising. It can also mix a live video signal with the Amiga video output – genlocking.

These two functions have, until now, needed two separate boxes. SuperPic is the first product to have both – and it's British.

Most of the clever stuff in the hardware sits inside an Application specific integrated circuit (ASIC). Once more than 100 separate chips, this inch square blob of plastic-coated crunchy silicon controls everything else and explains how SuperPic can do so much in such a small box.

The ASIC tells the chips that convert the video signal into a digital form when to start and then works out what to do with the result. It controls the way the computer gets at the final picture, keeps the memory (192k, expandable to 512k) in order, as well as numerous other housekeeping bits.

By setting up addresses while reading data, instead of keeping the two operations separate, it manages to get fast performance out of cheap, fairly slow – for video – ram chips.

There are two circuit boards in the SuperPic, the digitiser and the genlock. These are connected by cables – when I got the unit, one of these had become unplugged in transit and I had to open the box to fix it, but the boards have been redesigned since.

The circuitry sits in a beige metal

, I captured

Video cameramen lust after digitisers and genlocks for their Amigas. Rupert Goodwins looks at a box which has the features of both

box of sturdy construction, as wide as this magazine is tall and about two-thirds as deep. This is designed to sit on top of an A500. Another lead goes from the SuperPic to the parallel printer port on the back of the Amiga. There's no through printer port, so you'll have to unplug it if you want to commit anything to paper. Shame.

VIDEO output is from either an Amiga-style D-type socket (RGB and others) or a phono socket (composite colour PAL, as digested by video recorders). Video input is through another phono socket, this time mounted on the front panel. Also on the front panel are controls – two buttons, one to switch genlock on and off and one to toggle between colour and monochrome display.

Five knobs control what the monitor displays, the brightness, contrast, colour saturation and the hue. This last only works with American NTSC systems. Europe's PAL TV is more advanced, and gets hue right automatically. The monitor can display the computer output, the video input and the product of the digitiser.

Plug the SuperPic's power supply into the back of the unit – there's no on/off switch, but nothing gets too warm if left on for days – and the LED glows. Then the Amiga can be switched on, and everything works as before.

SuperPic doesn't do anything until the software's loaded, unlike some simpler genlocks. The software was version 1.9, and this, like the manual, is in a state of not-quite-finishedness. Some features remain to be implemented, and I had several crashes over two weeks of testing. It needs at least a megabyte of memory, a limitation unlikely to be removed in version 2.0.

There's only one screen in the software and this normally displays the currently digitised picture. The menu bar along the top of the screen provides access to the rest of the controls for the SuperPic. The first item is the Project menu. Several pictures can be held at a time using slots.

Save and Save Format store pictures and choose whether to save in IFF, compressed or raw format, Open loads a picture in from disc, Title Bar and Mouse Pointer turn off their respective bits of screen – useful for recording a picture on video – and Screen Format chooses interlace and overscan. It also sets the size of the picture to be digitised. About tells you how much free memory there is, and Quit quits.

The next menu is Picture. This is where it starts to get interesting. Freeze stops the digitiser and leaves a still picture in the framestore memory of the SuperPic itself. Import takes that picture, or even a moving one, translates it and imports it into the Amiga's memory. How long this takes depends on the screen mode; the higher the resolution and the more colours, the longer the process will take. But it's never more than a few seconds.

Clear clears the screen; Upload takes a picture from the Amiga and passes it back to the framestore. Set Frame reduces the size of picture over which operations work; this reduces the memory requirements and speeds things up.

JCL recommends that if you think you need more memory to improve the picture quality you try some experiments on a reduced frame first. This lets you know exactly what the pictures will look like without you having to sell your soul for more ram.

Grey scale, the final option, produces a test pattern to help set things up.

Next along is Tools, a set of special effect routines which do things to the picture. These only work in monochrome mode, since JCL considered the extra time and ram needed to get them functional in colour wasn't worth the benefits gained. Still, you can artificially enhance or suppress the contrast, trace out object edges, quantise pictures, check on the white/dark balance and so on.

QUANTISATION is a method of changing the picture resolution; the effect is to make the image far more blocky. You may remember that the Eurovision Song Contest made a lot of use of such an effect this year. Then again, people have joined the Foreign Legion just to forget Eurovision Song contests.

Other commands, like Clip and Threshold, set the limits of brightness within which the picture displays – 10 minutes playing with these tools and it becomes obvious what they're doing, why they're doing it and when you last saw the effect on a Chart Show video.

The last menu is Options. At the moment, it would be better described as Option, since all you can do from it is set the number of multiple exposures you want layered on top of each other. This is an analogue of the old photographer's trick of taking a picture, changing the scene and re-exposing the film. Static pictures can be much improved with this.

This is good, because one side effect of the SuperPic is that it makes all the little faults of a video picture all too plain. Most people are happy with their TV picture because it's constantly changing and difficult to analyse for imperfections. Look closely and you will see solid colours become mottled, small areas of bright colour are smeared, images have ghosts, all manner of subtle horrors. And SuperPic will capture these with alacrity.

Still, it's a good idea to get used to SuperPic on TV signals – most easily imported into the digitiser from the Video Out socket on your VCR. Such scenes are well-lit with a good colour balance, after all, that's what TV ▶

◄

companies pay their engineers to assure.

Only then try and capture pictures from your home movies or camcorder; deficiencies in lighting which go unnoticed normally make for really awful digitised pictures. If nothing else, SuperPic can improve your camera technique.

GENLOCK is a totally separate feature from the digitising functions. In order to enable it, some software has to be run; this makes one of the Amiga colours show live video. This is the colour that is used for the backdrop of the desktop, producing an effect of the windows floating over Terry Wogan's head. Those prone to childish delight (guilty, m'lud) can draw false moustaches, halos or silly captions.

The works.

In use, SuperPic is fun, but the software isn't finished, and it shows. The choice of colours isn't as good as that with Digiview. The various effects available by changing the screen mode are interesting; here the occasional crash, picture corruption and vanishing menu bar were noticed. In particular, the software contains no checks that you're driving the hardware too fast.

As exciting as the current capabilities of the SuperPic are, it's clear that the hardware is capable, without modification, of many more tricks than it currently exhibits.

It could do timelapse, where a picture is sampled once every minute or longer. It could do rapid-fire digitising, where 20 consecutive pictures are taken and stuffed into ram. There are whole sets of video special effects – bouncing boxes with pictures in, flips, fades, you name it – just waiting for the small matter of the appropriate software.

REPORT CARD

SuperPic
Precision Distribution 01-330 7166
£573.85

EASE OF USE.........
The short cable is a pain but otherwise SuperPic is simple to set up.

SOFTWARE...........
The early software is a little buggy and not capable of producing the results you would get with NewTek's DigiView III software.

SPEED....................
Images can be grabbed instantly. Parallel connection to the Amiga makes downloading quite quick.

VALUE..................
SuperPic is an expensive toy. But to get something which does as much makes it a bargain for video buffs.

OVERALL 73%

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For the

Amiga 500...

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Half a Meg at a Great Price!

As we are all coming to realise, a one megabyte Amiga (at least) is a necessity not an option. When you add the inboard 512k memory and clock module to your A500 make sure it's a MicroBotics M501. Note that just like the Commodore and unlike some third party expansions, we use a long lived rechargeable NiCad battery – which you'll never have to replace. Set the MicroBotics clock using the same WorkBench software as you would use for the Commodore clock. What's the difference? You get to keep £25 compared to the Commodore version. The M501 is available now.

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For the

Amiga 1000...

StarBoard2

The Expansion of Choice

The superb memory expansion for the Amiga 1000, still going strong! Up to 2 megabytes of autoconfiguring, zero wait state, FastRAM in a sleek, all steel Amiga coloured case plus the capability to accept either of the two daughterboard modules, the original Multi-Function Module or the new SCSI Module. StarBoard2 is powered by the bus (up to two StarBoard2's can be supported by the A1000) and passes it on.

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MultiFunction Module

High Tech at Low Price

This daughterboard installs on any StarBoard2. It features a socket and software for the 68881 Math Chip as an I/O device (MicroBotics pioneered this approach on the Amiga – now directly supported in the maths libraries of AmigaDOS 1.3). StickyDisk gives you the most "bullet-proof" rebootable RAM disk – its hardware protection turns it into a solid state, superfast disk. Parity checking of StarBoard2 RAM can be enabled when extra parity ram is installed. Finally, the MultiFunction Module carries an easy to use battery-backed clock to set the system time on startup.

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AmigaDos left to its own devices

Think AmigaDos is a pain in the unmentionable? Henning Sorenson shows why you may have judged it too quickly. Read on, and utter bewilderment may come your way

ONE of the great things about AmigaDos is that it has lent theology a whole new dimension: "How can a God exist, if something as obviously evil as AmigaDos has been created?"

The debate is still going strong in religious circles, while Dr Tim King, the creator of the beast, has gone to do better things. He is currently writing an operating system for parallel machine – pay attention, it's the only warning you're likely to get – as a study in machocism.

Fortunately there are a number of serious design flaws in AmigaDos, things that actually make life a bit easier for the poor soul on the wrong side of the screen, and the subject of this article, devices, happens to be one of them.

AmigaDos is the best operating system for under £10,000 when it comes to handling devices. But what are devices? Well, they are anything you can possibly hook on your Amiga with which you'd like to exchange data – disc drives, hard discs, atomic clocks and the odd printer.

But they don't have to be hardware. A device can be purely software, and examples of this are the resetproof ram disc and SPEAK: in Workbench 1.3.

Talking about Workbench 1.3, let's have a tour around the new devices introduced to Amigaoids with this upgrade.

Five new devices were brought in: AUX: PIPE: SPEAK: RAD: and a new improved console device which deals with keyboard input and text output to the screen called NEWCON:.

Before you can use any of them, you have to issue a CLI command called Mount to tell the Amiga to load the bit of program to control the device. To Mount the SPEAK: device just enter the command:

```
MOUNT SPEAK:
```

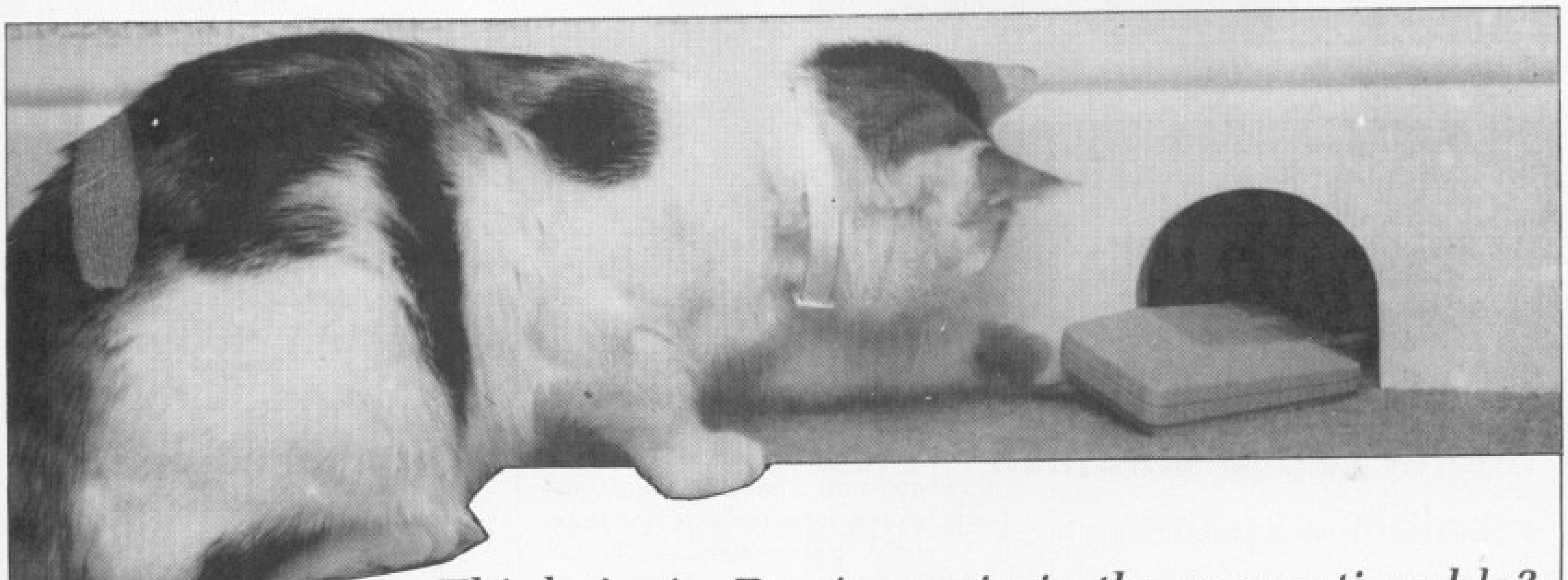
In this barrel of apples, AUX: is the rotten one, or at least the least interesting. This device provides "unbuffered communication with the serial port", which means it does the same as SER:, the "old" serial device. It just sends the data to the serial port right away while SER: waits until it has a bunch of data to send down the line.

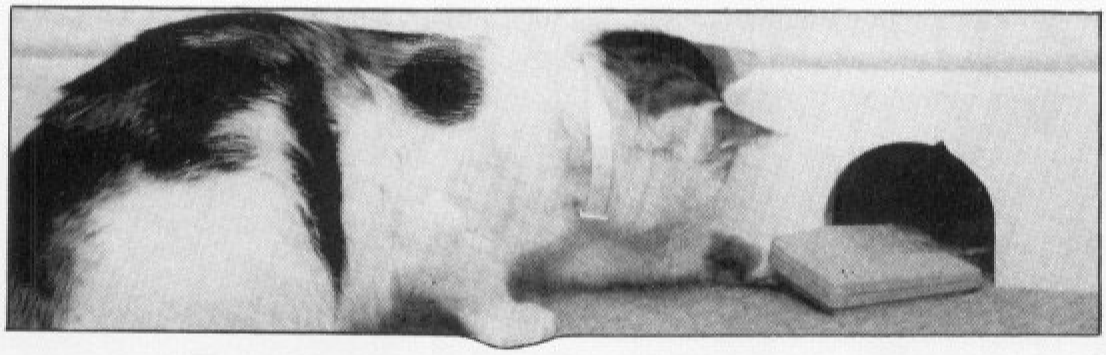
Unbuffered communication is an advantage if you want to hook a second computer to your Amiga and create a simple multi-user machine like the big mainframes the boys at university play around with. Try hooking another computer with your Amiga and issue the command NewCLI AUX:.

Now you should, with a proper comms program at the other end, be able to run CLI based programs on the "terminal". Remember, no fancy stuff will work here, no windows, screens, clever graphics nor sound – just pure text. This feature could prove very useful if you run some important software on your Amiga while you're away from it. Just call up via a modem and a portable and check what is happening. Perhaps AUX: is not so boring after all.

JUST to clear up any misunderstandings, when discussing PIPE: we are *not* talking about subtle suicide kind-of-pipe you stick in your mouth, but rather the kind you stuff into the ground and pour water through.

With PIPE: you lay down a pipe from one program to another, pouring data through it, or in programmer terms: Make the standard output of ▶





one program the standard input of another.

In lay-Amigaoid terms that means this will not work with anything more graphical than the letter Q, just like AUX:. What it does is take what the CLI command DIR writes on the screen and pass it as input to some other program.

Even though this is useful in something like Unix on a huge multi-user mainframe where it has been around all the time and is implemented with Ts, valves, pumps and other goodies to make it utterly confusing to the casual user (there are no casual Unix users, they all killed themselves in a fit of depression), it isn't really all that hot on the Amy because nothing is written to take advantage of it.

An example of its use could be a program which is doing heavy calculation and outputing the results as it goes. You have got a second program which will take data in the format the first program outputs it, and make it into a beautiful graph on your plotter.

Instead of waiting for the numbercruncher to finish, you can make the output of the numbercruncher the input of the graph plotter, and the graph will be made on the fly and you will save some time. Neat eh? Of course this is very unlikely on the Amiga. We have the graph output on-screen in a flash and print it out equally fast.

Pipes are most useful on text-only machines, not on graphical whizzboxes like the Amiga. If you can find a use for it, here is how it works :

```
dir >PIPE:NAME
type <PIPE:NAME
```

Quite a stupid example, I agree, but it illustrates how it works. The greater-than symbol > is the standard output redirection symbol. In the first command we redirect the output of DIR to the Pipe device.

The NAME after the colon is to help us identify the output, and is very useful if you have more than one program redirect its output to Pipe at any one time. As you may have guessed, the < means redirection of standard input, so now Type takes the output of DIR and prints it on screen.

You can try to open another CLI window with the New CLI command, first entering the Type command in one window, and then enter the DIR command afterwards in the other window. Notice how Type waits until you execute the DIR command. This is one point where Pipe differs from simply redirecting the output to a file. In the case of Pipe, the receiving program will not abort if there is no input ready for it, but wait a while before doing so. This means that you can use Pipe to transfer information between CLI tasks without worrying whether the data is ready.

IF you read my piece on the Amiga Workbench *(July 1989)* you know how I feel about computer speech. Thanks to the really clever people at Softvoice this will be vastly improved with Workbench 1.4. However opposed to computer speech I may be, I must admit it can be used for something other than impressing you girlfriend-to-be. You use it with redirection just like Pipe. Try to execute the command :

```
echo >speak: "Hi frods, said Zaiphod"
```

Get the point ? By the way, the "i" in Zaphod is just to make it sound better, my spelling may be lousy, but I never forget a intergalatic president's name.

You could use this in script files to give the operator some audio feedback, for example when the Amiga has finished a time consuming operation, or if an error has occurred. You can make it speak a whole document if you wish just by using the Copy or Type command:

```
type mydoc.letter to speak:
```

will read mydoc.letter; great if you have poor eyesight, I guess.

There are a couple of parameters it'll be useful to know if you want to use SPEAK:. The syntax is like this:

```
type mydoc.letter to speak:opt/
```

after the opt/ follows the options, each separated with a forward slash (/). The options are :

M : Use male voice
F : Use female voice
R : Use robot voice
N : Natural speech

O0 : Do not allow options in the input text
O1 : Do allow options in the input text
A0 : English input
A1 : Phoneme input

Pn : Pitch setting (n is a number from 65 to 320)
Sn : Speed setting (n is a number from 30 to 400)

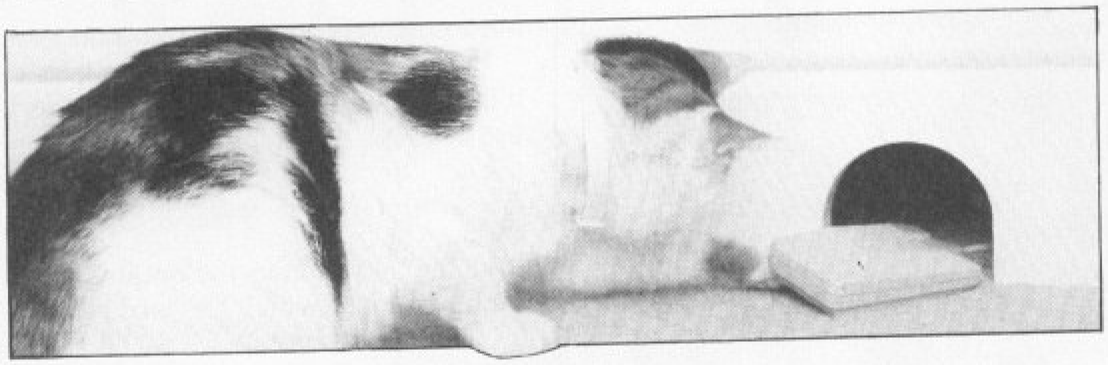
As you can see, these options are not much different from the ones in the Say demo. The options with more than one setting (O and A) default to the 0 setting. As you may deduct from the above (well done indeed Watson!), you can have the options in the text as well. Just add the option lines in your text file like this :

```
opt/m/s170/p150
Marvin rolled up beside Arthur and said :
opt/r/s140/p120
Life. Don't talk to me about life.
opt/f/s180/p250
Stick it up your nose Marvin
opt/m/s170/p150
said Trillian
```

YOU are probably already acquainted with NEWCON. This little number gives you command line editing and history. One of the things that made AmigaDos unbearable in the past was the lack of these very features, and now they are here. To take advantage of NEWCON: when you start a new CLI from the CLI supply these additional parameters:

```
NEWCLI NEWCON:x/y/width/height/Name
```

where xpos is the x position of the window with the origin being the upper left corner of the screen, width the width and so forth. Name is a bit



special: If you want spaces in the name, do remember to put the whole string in quotes like this :

```
NEWCLI "NEWCON:0/0/640/256/Where's my
towel ?"
```

This will give you a pretty nice CLI window which will fill all of the screen.

SAVING the best for desert, here, ladies and gentlemen, is RAD, the reset-proof ram disc. This is a great little bag of tricks, and even though a work-a-like has been available in the public domain for a long while as have most of the other "new" devices, it is nice to see it being made available to others than Amigaoids-at-heart.

RAD is a bit more difficult to work with than the usual ram disc. For one thing, you have to mount it, which isn't a great bother, but it isn't dynamic, meaning using no more ram than it absolutely has to.

Also it works more like a disc drive, hogging a bit of your memory and sitting on it forever, reporting disc full if you try to cram more in. This means you have to know just how much you are likely to use before you mount it.

Don't be overly optimistic about you requirements, since it steals memory in which you could otherwise run programs. This is a fine balancing act.

Assuming you have figured out how much memory you are likely to use on RAD:, find your favourite editor and have a look at the file called MountList in the devs directory.

This is where all the clever bits are, and since Amigaoids are smarter than average (you bought the machine didn't you?), you have probably already figured out that the capitalised names with the colons on the left-hand side are the names of the devices, and the indented text after them is information to help AmigaDos figure out what to do about them when you try to mount them.

You shouldn't pay too much attention to MountList values, since they are only of interest to AmigaDos and your average low level machine code hacker. Included in the information is the full name of the device – to be used when they are opened from within a program – stacksize, memory (and memory type) to be allocated for buffers, and, for the disc devices, the size, interleave and various other bits and pieces. If you locate RAD: in the MountList you'll see something like figure I.

This set RAD: up to act as closely as possible to a real disc drive. The figure to juggle if you want to change the size of RAD: is HiCyl. As you can see, my RAD: is set up to with 21 cylinders, which gives me a total of:

```
(HiCyl - LowCyl + 1) * BlockPerTrack *
Surfaces * 512 =
(21 - 0 + 1) * 11 * 2 * 512 = 247,808 =
242K
```

bytes used. This is, unfortunately, not what I will have available for data, since AmigaDos hogs some space for itself to hold information on how to figure out which bytes go in which file, checksums and stuff like that.

So depending on how many files I use, how many directories I make and so on, I'll probably have something like 220k available for data. Real life discs suffer the same problem, so even though Commodore claims each disc holds 880k of data, remember it is *raw* data, you'll be lucky if you can cram 800k on to it.

```
RAD: Device = ramdrive.device
     Unit = 0
     Flags = 0
     Surfaces = 2
     BlockPerTrack = 11
     Reserved = 2
     Interleave = 0
     LowCyl = 0 ; HiCyl = 21
     Buffers = 5
     BufMemType = 1
```

Figure I: MountList entry for the recoverable ram drive.

If you want to fool around with RAD:, I suggest you only change the HiCyl value, and leave the others alone, since there isn't really any point in changing the BlockPerTrack or Surfaces variables other than mess around and make a pig's dinner of the MountList.

If you sit around and think: "This is all very well, but what is it to me?" you obviously haven't thought about how RAD: can change your life and let you get on to doing the clever bits instead of watching the drive light flick on and off.

Single drive users will have a field day putting the most used commands from the C directory into RAD: which will give them the opportunity to mess around on other discs without having to be disc jockeys. And if you have a lot of ram, consider stuffing a complete Workbench into RAD: when you turn your computer on in the morning, and just working from ram the rest of the day, leaving your drives free for better things.

This is especially useful if you have KickStart 1.3 which will let you boot off ram, making startup-sequence fly like never before. Programmers can save hours of development time by keeping essential bits like the C include files in RAD:, so they don't have to wait a week and a day for the machine to boot when the chart-topping game-to-be crashed for the umpteenth time.

THE quick tour I have given here may suggest devices are very powerful, but it is only when you build and have to interface some hardware of your own to the Amiga, you'll realise just how powerful the concept really is.

Devices let you communicate with stuff in a completely standard way which makes it ridiculously easy to attach hard discs, optical discs, rom discs, other computers and things never dreamt about by the designers of our own little favourite machine.

It will go beyond the scope of this article to plunge into the depths of just how to write that important bit of code to control the device, but interested parties should read the ROM Kernal Reference Manual : Libraries and Devices for a complete example of a do-nothing device.

The Amiga that thinks





Already capable of emulating an IBM, a BBC and have a good stab at reading C64 data, the Amiga can now play at being the sexiest business computer. Rupert Goodwins takes a bite of the Apple

it's a Mac

HOW can you make a Macintosh? Apple would much rather you didn't; if you're a clone manufacturer you can be sure that the Californiakids will make this perfectly clear. However, Apple can't do much about people buying Amigas, and neither can it unleash the lawyers on anyone selling small boxes that look more like StarTrek phasors than a working Macintosh.

And if that box just happens to turn your Amiga into a Macintosh, then everyone's happy (except Apple).

A-Max, from ReadySoft Inc, is just such a box. Theory says that for £130 and a couple of standard Apple spare parts it will connect to your £400 Amiga and the poshest software on the block can be yours. Life is rarely this simple: The road to Macintosh compatibility is sprinkled with pitfalls.

The first hole is availability of Apple roms. These are the spare parts that A-Max needs; they're chips containing all the information the computer needs to work the disc drives, speak to the screen and run applications programs much like Kickstart in your Amiga. They are the heart of the Macintosh.

A-Max can use roms designed for the original Macintosh 128 and 512 The 64k roms, or the 128k parts found in the Macintosh Plus. It cannot use any of the more recent roms. For the review, I extracted a pair of chips from an unsuspecting Plus. The smaller roms are limited to older software and can't support the newer systems. The price of either set is variable, but is normally around £50.

INSTALLATION is a 10 minute job. Unscrew the A-Max case – a small, grey box with the signatures of the designers on the inside (like the original Macintosh; is this taking compatibility to ridiculous extremes?).

Once the case is open, the roms are plugged into a pair of empty sockets. Some care is needed to avoid the dreaded bent pin. That done, the A-Max unit can be plugged into the Amiga's external disc drive port or into the back of a disc drive with a through socket. But don't switch on yet.

Although the Amiga has the same physical type of disc as the Macintosh – double sided, double density 3.5in – the way that the information is stored is different. Apple decided to use an odd format that marginally increases the amount of data a disc can hold, but at the expense of needing special disc drives. As a result, the standard drives found in an Amiga – and IBM, ST, BBC – in short, everyone else's computer – can't fully read a Macintosh disc. A-Max has taken two approaches to solve this dilemma.

First, there's a socket on the side of the computer which accepts an Apple standard external disc drive. This is the best option, since it means that the computer can read and write proper Macintosh discs without more ado.

The second option is to produce a "special" system disc on your Macintosh with only 270k of system program and data. This can be read by the Amiga's built-in disc drive, and is just enough space to fit a very basic system with no frills.

When the Amiga is first turned on it behaves exactly as before. It can run all Amiga software, including games and utilities, as if A-Max wasn't there. A special program has to be run to start the emulator.

First it lets the user choose various options such as screen size, printer ports and the amount of memory to give the pseudo Macintosh.

All these things need to be set up because, at heart, the Amiga is very different from a Macintosh. For starters, the Macintosh screen is 512 x 384 pixels in size; the Amiga can display up to 640 x 512 with interlace flicker. This gives a much bigger screen area, however since the Amiga normally shows 640 x 256 pixel screens there are options to display part of the Macintosh screen and reveal the hidden part when the mouse moves towards it.

There are also options for the Moniterm screen reviewed in the April issue, which will display up to 1008x800 pixels. All this is, alas, in monochrome – the Amiga's colour capabilities are not used by A-Max.

Finally, the internal addressing of ram – where the computer finds memory, and where it finds empty space – is different between the Macintosh and the Amiga. Normally, this won't matter, except that the system will report far more ram than is actually present.

I tested A-Max on a 1 meg Amiga, 800k of which was available to the Macintosh emulator. The manual warns that some software might not be able cope with the differences, and for this reason the amount of memory can be limited to 512k of completely compatible ram.

The preferred settings can be saved to (Amiga) disc, and then the final step taken. With a click of the mouse, the emulator is started. It spends the first 20 or 30 seconds copying the software from the roms on the A-Max board into the Amiga's memory. Then the familiar *Welcome to Macintosh* screen appears, followed by the Macintosh Desktop.

To the Amiga user, the Macintosh Desktop will appear familiar enough to immediately use most programs. Both the Amiga and the Macintosh start programs off by double-clicking on a program or data icon, both have windows that can be moved around the screen and resized, and both have a trashcan for the removal of old data.

The Macintosh has no CLI, which is one reason for the considerable culture shock that hits an Amiga owner when first confronted by a

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Macintosh. But the programs are very similar – there's a very strong family resemblance between the standard Macintosh and standard Amiga user interfaces, with a menu bar along the top, pull-down lists of commands and keyboard short cuts. The lack of multi-tasking makes you wonder why all Mac owners have not migrated to the Amiga.

The keyboard is another area where the Macintosh and Amiga differ. The Macintosh has various special keys, most notably Option and Command, which A-Max replaces with Alt and Amiga. The standard Macintosh system software comes with a utility called KeyCaps – this displays the keyboard and all the active keys, and is very useful for finding the many obscure symbols in the wide range of Macintosh fonts.

SOMEONE has thought about using the system. There are various other nice touches. If you've selected less than the full amount of Amiga ram for the Macintosh when starting up, the spare memory is available as a ram disc. This acts like a very fast floppy, but can survive restarting the emulator. Indeed, if it has the system files copied to it the emulator can reboot from this ram disc and thus get going with a fair deal of speed.

More disc dabbling comes from another difference between the Amiga and Macintosh hardware. Macintosh drives don't have a disc eject button; instead, they have a motor which shoves the floppy out under computer control. Since the Macintosh has such complete control over disc changes, the system software always knows what floppy is present and often doesn't write information to it until the very last minute.

With the Amiga, this mechanism isn't present, unlike the chance to comprehensively mess up a disc by swapping it behind the computer's back. So A-Max flashes little icons on the screen when it wants to eject an Amiga disc – ignore them, and you lose your data.

When in Macintosh mode, floppies formatted on an Amiga drive will be in a special A-Max format, similar to the Macintosh's but only readable by A-Max. As well as the internal drive and one Macintosh external, up to two more external Amiga floppies can be daisychained on to the back of the A-Max box, and these are available to both operating environments.

A-Max provides various utilities to move data between the Macintosh and Amiga. The cleverest splits a Macintosh disc into three 270k "special" Macintosh discs which can be read on the Amiga drive; these can subsequently be glued back together into one A-Max format floppy.

This is ideal for those with access to a Macintosh and an Amiga but no Apple external floppy disc drive. I imagine that most people will have this configuration. Those with the external drive can copy stuff between the Amiga and Macintosh file systems with another utility.

The final point to note is that the Apple's special sound hardware isn't emulated. In theory, it's just about possible to persuade the Amiga's sample-based sound circuits to eat Apple's words, but I'm not at all surprised that ReadySoft has chosen to forego this can of worms and limits the sound that can be produced to a simple beep.

As the manual states, this will cover most "productivity" software, the sort of program that A-Max is designed to run. In any case, most of the Macintosh software that uses fancy noise is either a music utility or a game. On both counts, the Amiga is so much better than the Macintosh that this really doesn't matter.

The really addictive Macintosh games tend to be strategy-based and will most likely work anyway.

VARIOUS faults were uncovered during testing. One of the most exasperating was the complete refusal of any of the printer emulation stuff to work. Signs of a hastily-shipped product? This impression was heightened by a similar problem with the elderly Apple disc drive I tried to use.

Although the UK distributors weren't clear on the point, a prowl around various US-based bulletin

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COMMUNICATING

PRINTERS are complicated, because the Macintosh has no parallel printer port and A-Max has some translation software. This works with the normal 9 or 24 pin Epson-compatible printers that inhabit the non-Macintosh world, or the Apple ImageWriter dot matrix machine.

Due to hardware limitations, A-Max can't talk to any AppleTalk device or participate in any Apple network. A special sequence diverts any output that would normally go to a PostScript laser printer – such as a LaserWriter – to a disc file that can subsequently be taken to a proper Macintosh and printed.



From hereon in it's all mono

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boards revealed that, yes, the first version of A-Max had many bugs. At the time of writing, the same US sources claimed that various hardware and software changes had been made, and that A-Max was now reasonably bug-free. I was unable to obtain a fully working version in the time available.

Even so, the level of compatibility was impressive. About 80 per cent of the software I tried on A-Max ran as if it were a true Macintosh. Stalwarts like Word and MacPaint were happy, the one main fly in the emulated ointment being the Hypercard database-cum-programming language (apparently now fixed).

The main problem was the lack of memory. The officially sanctioned minimum which Macintosh owners are supposed to have is a full megabyte and this is shortly to rise to two. I couldn't do anything useful with MultiFinder – the Apple version of a multi-tasking operating system – for example. However, Amigas are expandable like the Macintosh to eight megabytes, all of which would be available to A-Max.

I found that the programs ran noticeably faster, on average, between 10 and 20 per cent. This is for two reasons – the Macintosh isn't a very efficient design and the Amiga runs faster anyway.

I can see A-Max enjoying a rosy future, provided all the bugs are weeded out (and of how many products has that been said?). It will appeal mostly to those with access to a Macintosh already, both because of the file transfer factors and because you've got to get the Macintosh system software from somewhere. Apple's licensing agreement specifically prohibits the use of its stuff on non-Apple computers; however, the legality of such a restriction is doubtful. Most people feel that, provided you're only using the software on one machine at once, the letter and spirit of the law of copyright is being complied with.

However, it works. Mostly. It's probably more useful than any of the MSdos emulators, and as the Apple Macintosh becomes more popular, this will become more and more true. The perfect excuse, Macintosh users, for an Amiga at home...

REPORT CARD

A-Max
Readysoft 0268 541126
£134.95

EASE OF USE........
Hardwarewise a simple plug-in-and-go. You will need to understand a bit about the Macintosh.

SPEED......................
The Mac is slow, but it is still very, very unusual to find an emulator which runs faster than the native computer.

VALUE ....
Marred by bugs. American users who have seen revisions claim that all the major problems have been fixed.

OVERALL *88%*

If the bugs have been fixed add another 5% plus to the score. A unique and amazing product.



More than just a pretty

Mike Rawlins looks at a printer which manages to be fast, high quality and quite colourful

THERE is no better workhorse than a dot matrix printer – it will clatter away long after it's thoroughbred cousins are complaining of "toner low", "paper feed jammed" or some other namby pamby excuse.

Today's dot matrix printers are becoming more sophisticated, versatile and turbo-charged. Combine that with competitive pricing and low running costs and you have a printer that can be used for large workloads without breaking the bank balance.

As always, the name that first comes to mind when printers are discussed is Epson. The LQ860 is its latest offering, a 24 pin colour machine that is compatible with all previous Epson LQ printers, with a number of new facilities which make it both flexible and easy to use.

With clean, elegant lines it is attractive in a way which is far removed from the rugged, chunky look that characterises some of the latest impact printers. It is not small with a 16in by 18in footprint.

The control panel at the front right is clearly labelled to give a quick way of selecting from a number of in-built font styles and pitches, as well as paper handling functions which include a single sheet load.

The cover lifts back while a flap lifts forward and off to give access to the print head and ribbon. Two banks of DIP switches are also easily to hand. These can be used to set parameters for use with the serial port, print buffer size, default paper length and a range of other functions.

Setting up the LQ860 is straightforward. The documentation is clear and contains a step-by-step procedure which should take you through the printer assembly and self tests without any problems.

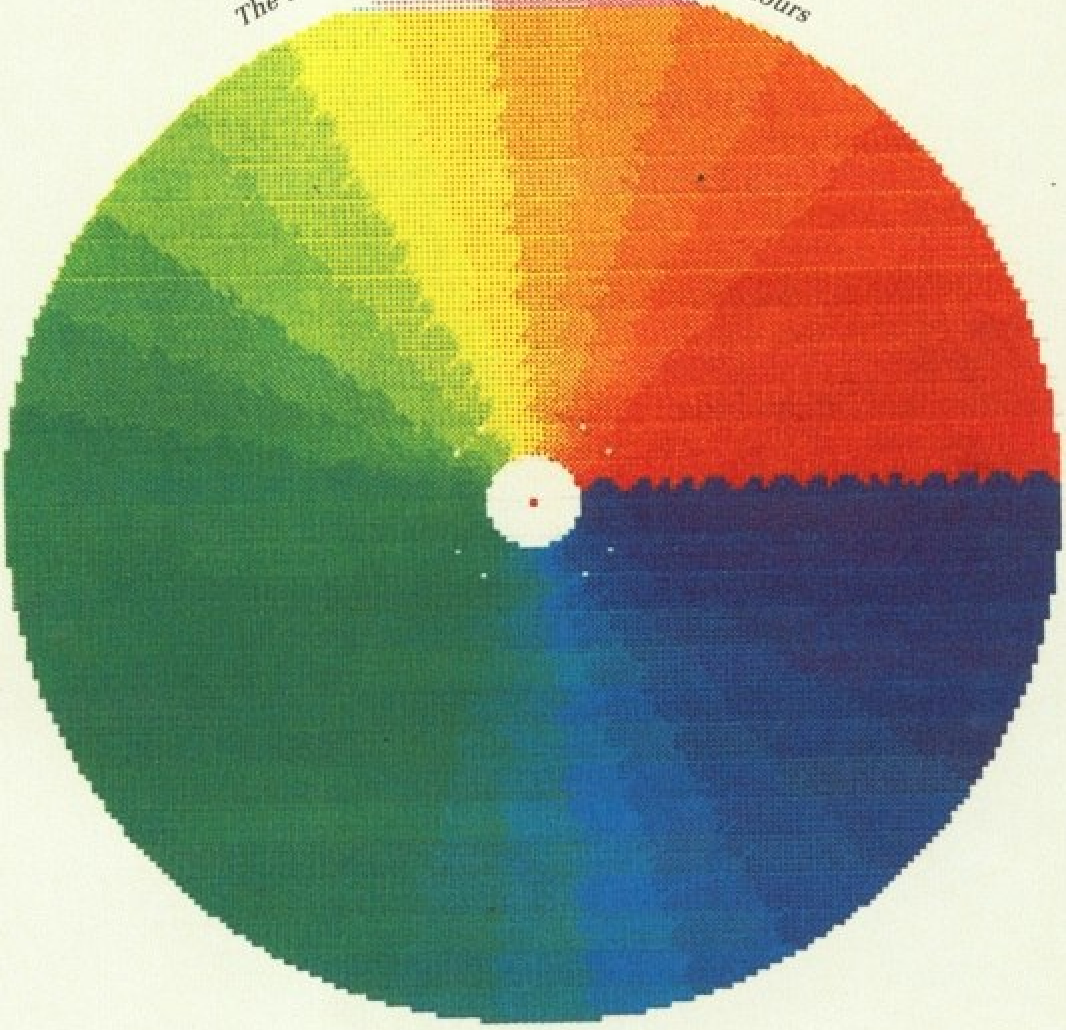
Both a parallel and a serial interface are supplied for connection to your Amiga. The parallel interface is the easiest to use, although the manual provides a wealth of information on serial communications which you might want to explore if your parallel port is tied up with a digitiser.

EITHER single sheet or continuous paper can be used. Single or double bin cut sheet feeders are available as options as is a pull tractor feed. This is recommended for use with special paper such as multi part forms and labels because the standard push tractor will not hold pages together.

Using continuous, no carbon, multi part paper, one original and up to three copies can be printed. The cut sheet feeders can be fitted without removing the continuous paper which can be held back while cut sheet



face



printing is in progress.

The first thing you notice when the printer is switched on is the fan, which is not the quietest that's ever been produced. While the noise doesn't exactly fade into the background, it does become less obtrusive as you work on.

The noise when printing is remarkably low. No impact printer is ever going to be silent, but this one achieves a level which, subjectively, seems relatively quiet and is more than acceptable. It is substantially quieter than its Citizen rival, the HQP-40, perhaps because the plastic is a lot thicker.

TWO built-in letter quality fonts, Roman and Sans Serif, and one draft font are available in a range of pitches from 10 to 20 cpi, plus proportional. Two expansion slots can be used to fit optional font modules which include Courier, Prestige and Script. Various international character sets may be selected using the DIP switches, which may also be set to provide a high speed draft mode.

Print quality is good for both LQ and draft, as you would expect from a 24 pin printer. Character formation is not so good in high speed draft mode, but is acceptable for program listings.

Quoted speeds are 290 cps in high speed draft, 220 cps in normal draft and 73 cps for LQ. In practice, with a typical page of text, print speeds are likely to be a lot less than these figures. All printer manufacturers fudge these figures and the best results I could get were 164 cps in draft and 52 cps in letter quality.

The printing presses used to produce this magazine create different shades by using four colours – cyan, magenta, yellow and black. Dot matrix printers such as the LQ860 achieve the same effect by using a four colour ribbon and making four passes across the page. The final quality is not as good, but is acceptable for general purpose use or for draft printing of commercial artwork. One problem is that the heavy printing required for large areas of solid colour tends to wrinkle the page.

The best results were obtained using Workbench 1.3 Preferences set to EpsonQ with colour. Dumping screens from Deluxe Paint worked a treat.

The printer's use of consumables is good. It is not particularly fussy about paper, accepting widths up to 10 inches. Ribbon life is quoted as three million characters, which may sound good, but then the ribbons are expensive, at £20.11 for the colour ribbon and £14.89 for the black fabric ribbon.

PRINT head life is claimed to be 200 million strokes per pin. I'm not going to count to see if they are telling the truth.

The LQ860 is a well designed, solidly constructed printer that provides excellent performance. It is expensive, but when you spread the cost out over a number of years it becomes a less flagrant purchase. Besides, someone has to pay to keep the Epson name on the side of a racing car or flying the flag around the most expensive golf courses in the land.

Epson has a recommended retail price of £861.35 to you and me. A few calls around some shops showed that the LQ860 can be picked up for £632.50 before haggling. This is an excellent price for such a well made machine.

REPORT CARD

LQ860
Epson
£861.35 (but haggle)

EASE OF USE
Simple to set up with good paper feed. Needs a lot of desk space.

SOFTWARE
Supported by preferences using the EpsonQ driver but might benefit from a custom printer driver.

SPEED
Despite not reaching quoted speeds it is fast without being too noisy.

VALUE
Epson's RRP is a joke, fortunately few dealers expect you to pay the full amount. Expect £200 off.

OVERALL *83%*

At a typical selling price of £550 plus VAT this is a great buy. It produces acceptable colour and great mono results. A master printer.

Magical

DESPITE rumours to the contrary there is music software available for the Amiga – good, hi-end pro stuff, and lots of it – sequencers, samplers, voice editors, random pattern generators. There's the whole range of traditional music software applications, and some not so traditional ones.

The same was not true 12 months ago, so for all Amiga maniacs who also happen to be musicians, this comes as something of a major relief.

Multi-tasking makes the Amiga an ideal music machine. A computer boffin may expect to finish doing one thing before another but the musician expects concurrency. Even the simplest one-man band wants to blow his kazoo while he strums a guitar and thumps a drum.

While other systems, like the Mac, attempt to simulate multi-tasking, and while some, like the IBM PC, have only recently introduced it as an alternate operating environment, of all of them only the Amiga comes out of the box with true multi-tasking as an inherent part of its operating system.

Only the Amiga lets you edit synthesiser voices while playing back a music sequence. In other words you will be able to change the sound of your synthesiser patch in real time as your music is being performed.

It means that you can search through voice librarian programs to find that obscure flugelhorn patch without having to reboot your machine.

The bits of the Amiga which usually go *kerrrzzzplat* are 8 bit digital audio channels. And there are four of them. In essence your Amiga is in fact a polyphonic, four voice sampling synthesiser.

Huh? You mean I bought a synthesiser, and I didn't even know it? Exactly!

Now listen carefully, because sometimes it takes a while for this point to sink in. Your Amiga is a synthesiser. And a sampler.

I have often thought it would be a great idea to sell plastic decals with a picture of piano keys and synthesiser faders that you could slap on to your Amiga simply to emphasise this important but often ignored fact – the Amiga is a stand-alone musical instrument.

Almost all Amiga music software is designed to take advantage of this unique and powerful feature. Why should this make you happy?

Because, for one thing, using only your Amiga and a music sequencer program, you can develop a full blown polyphonic musical arrangement or demo without plugging in a single other instrument.

And, then, when you are finally ready to incorporate other keyboards and synth modules into an extended Midi environment – no problem. Simply plug a Midi interface into your serial port and all the parts that were being played using the Amiga's own four voices can now be performed on any combination of external synthesisers or voice modules.

MULTI-TASKING and four channel audio would be compelling enough reasons for selecting the Amiga as a music workstation, but it's software which counts.

Making the Amiga rock there are four major players. Dr T's KCS (Keyboard Controlled Sequencer), Texture by Sound Quest, SoundScape Pro Midi Studio by Mimmetics, and Dynamic Studio by New Wave Software.

Of the four, KCS is the most full featured. It's a well implemented, mature and reliable program, with global editing features, adequate sync features and powerful realtime performance.

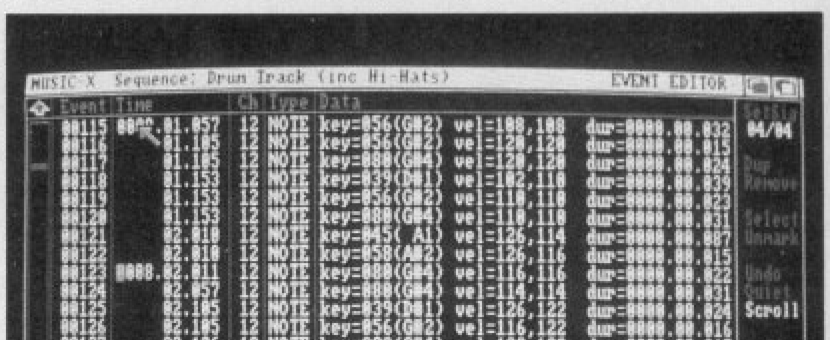
KCS has some interesting random pattern generators, sometimes referred to as compositional aids. These are algorithms that allow you to input a musical phrase and then randomly alter certain parameters of that material within limits you define.

It's a handy way of generating interesting musical ideas with a little help from your amigo. It's still up to you to decide what's musical and what's not.

KCS is a flexible music sequencer which, though not simple to learn, packs a lot of power under the hood.

A comparable Amiga sequencer is Texture, by Sound Quest. Like Dr T's KCS, Texture was originally written for the IBM PC and has been a tried studio standard for many years. The Amiga version remains true to the original and is further enhanced by taking advantage of the Amiga's graphic and audio abilities.

Whereas KCS takes more of a linear compositional approach, Texture is



From here you can examine and edit each event in sequence

Dean Friedman is an expert on computer music, on the Amiga particular. Based in the US he runs the New York School of Synthesis. Dean has had a number of chart hits including Lydia and Lucky Stars. He also wrote the title music for the television series Boon.

Dean Friedman explains why the Amiga is the right machine for professional musicians

Musical Tour

designed to record sequences more along the lines of a drum machine by chaining together short sections of music to create a song.

Although these two approaches reflect different orientations, both programs will easily adapt to your compositional style.

Both packages have been released by companies that produce a wide variety of compatible music software, particularly voice editors, which are designed to run especially well together in the Amiga's multi-tasking environment.

This allows for the kind of interactive and organic power-using I referred to earlier when explaining multi-tasking.

Being able to move directly from sequencing to voice editing to patch management and back on the same screen is a feature that is still unique to the Amiga.

An important entry in the Amiga music sequencer playoffs is SoundScape Pro Midi Studio by Mimmetics. In many ways it is the most idiosyncratic of the Amiga sequencers. The first pro music sequencer designed especially for the Amiga, SoundScape makes extensive use of graphics. Part of its interface uses a graphic depiction of the elements of a studio patch bay that allows you to establish signal routings by connecting two or more icons with a click of the mouse.

SOUNDSCAPE takes a modular programming approach – again taking advantage of the Amiga's multi-tasking – which allows you to operate a variety of different utilities including the ability to trigger and display pictures from a musical note within a sequence.

The result is a sequencing environment that is original and extremely powerful but which can also be intimidating to a beginner. A simpler, more traditional, front end would go a long way towards making this program more accessible to the average user. And, although Mimmetics has taken some steps in this direction it still hasn't gone quite far enough.

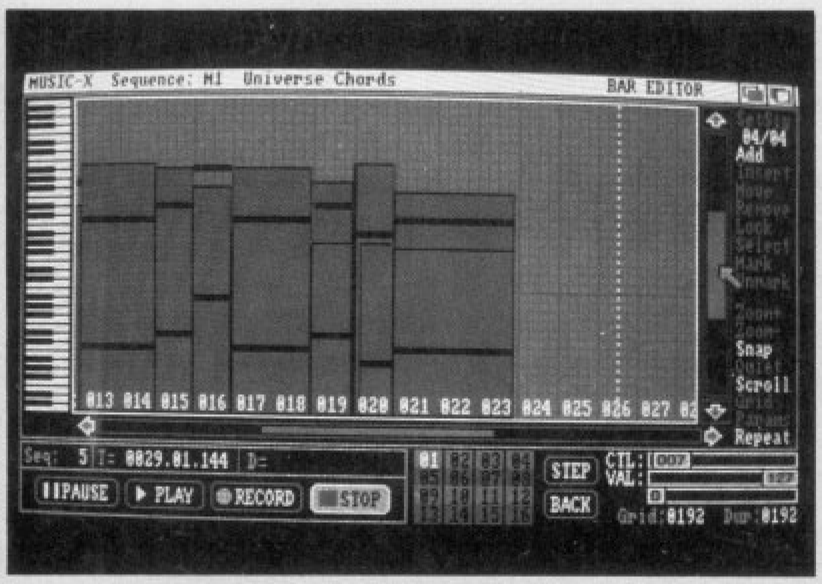
The youngest entrant in this field is a thoroughly enjoyable sequencing program called Dynamic Studio, by New Wave Software.

The company entered the Amiga music field a year ago with a great little program called Dynamic Drums which has the distinction of being the very first full featured drum machine on a disc. It makes use of the Amiga's four audio channels to trigger a variety of drum samples.

It didn't take long for New Wave Software to expand its hip little drum machine into a full fledged sequencer. The result is Dynamic Studio, a music sequencer designed to run right alongside Dynamic Drums.

Having a built-in drum machine would be enough to qualify Dynamic Studio as being unique among music sequencers, but it also has one other feature all of the other Amiga sequencers still lack, and that is graphic editing.

Dynamic Studio offers the cut and paste graphic note editing that has become standard on high-end sequencers within the last year. Using a mouse you can click and drag on ►



The bar editor lets you get at the guts of a sequence



The sequencer page allows instrument parts to be recorded one by one

◄

rectangular notes moving them along a piano roll-type grid. Editing features include insert, delete, move, copy and quantise.

Now, by virtue of its graphic editing alone, Dynamic Studio would be the Amiga sequencer of choice, if it wasn't for the fact that it lacks some of the important global editing and sync features of the other three sequencers.

The hard truth is that, even though all four of the products I just described can legitimately be considered high-end professional music sequencers, when compared head to head with the latest state of the art sequencers available for the Mac and the IBM PC, they still fall short.

Don't get me wrong. These Amiga sequencers are professional products. And, they can be and are being used by music professionals in recording studios every day.

But when it comes to providing the most up to date editing tools such as those for graphic controller editing – the ability to edit a feature such as pitch bend by drawing a waveshape with the mouse and SMPTE frame display, they are still about 12 months behind the industry leaders such as Vision by Opcode or Performer by Mark of the Unicorn.

DOES this mean I'm suggesting that you bury your Amiga in the backyard and run out to buy a Macintosh or (heaven forbid) an Atari ST? No. All I'm saying is that it's a trade off.

The Amiga is certainly a better machine. On the other hand, as Amiga musicians you will still have to make do without some of the newer editing tools that are fast becoming standard on other sequencing programs but have yet to be fully implemented in Amiga music software.

This will this change, imminently. Passport, one of the original makers of music sequencing software, has just announced that it is porting its popular Master Tracks Pro sequencer over to the Amiga.

Microillusions has released its long awaited Music X, written especially for the Amiga. It works and looks great.

These new releases will go a long way towards addressing all the sequencing needs of the Amiga musician. The sequencing packages existing today for the Amiga are not Mickey Mouse; they are professional sequencing programs.

And while you may have to sacrifice some of the more exotic state of the art sequencer editing features around, you still have access to significant features such as multi-tasking, four channel audio and enhanced graphics. These remain unique to the Amiga.

QUANTUM makes the Testarossa of the hard drive world. Beautifully produced, devastatingly fast and every bit as desirable. Unlike its Italian analogy, the hard disc comes in varying capacities. In this case it is an 100 megabyte drive.

Only one UK company, Power Computing, offers the Quantum drive as standard for the Amiga. It uses a selection of components to build the Turbo 3. The drive comes from the aforementioned Quantum, the gubbins – disc interface and room for 2 megs of expansion memory – from GVP, while the case and power supply are British.

Aimed very much up market from the Commodore A590, the Power Computing setup is a good deal more expensive. With the pick 'n mix options offered you can have anything from an A590esque 20 megabyte non-Quantum unit to the 100 meg review model with auto-boot board and 2 meg of ram. But the advantage of not following the Commodore route is only really marked when you set your sights high.

The most important part of the unit is the disc interface. Great Valley Peripherals has made quite a name in the US among the most critical audience, the Californian techies. Gregg Garrick at GVP started out producing a 1 meg ram expansion and hard disc interface for the A2000. He was joined by Gerrard Bucas who was formerly the vice-president of worldwide engineering at Commodore.

It is Gerrard's close contact with Commodore and understanding of how the Amiga works that has meant that GVP has a reputation for producing products even compatible with add-ons which usually cause problems.

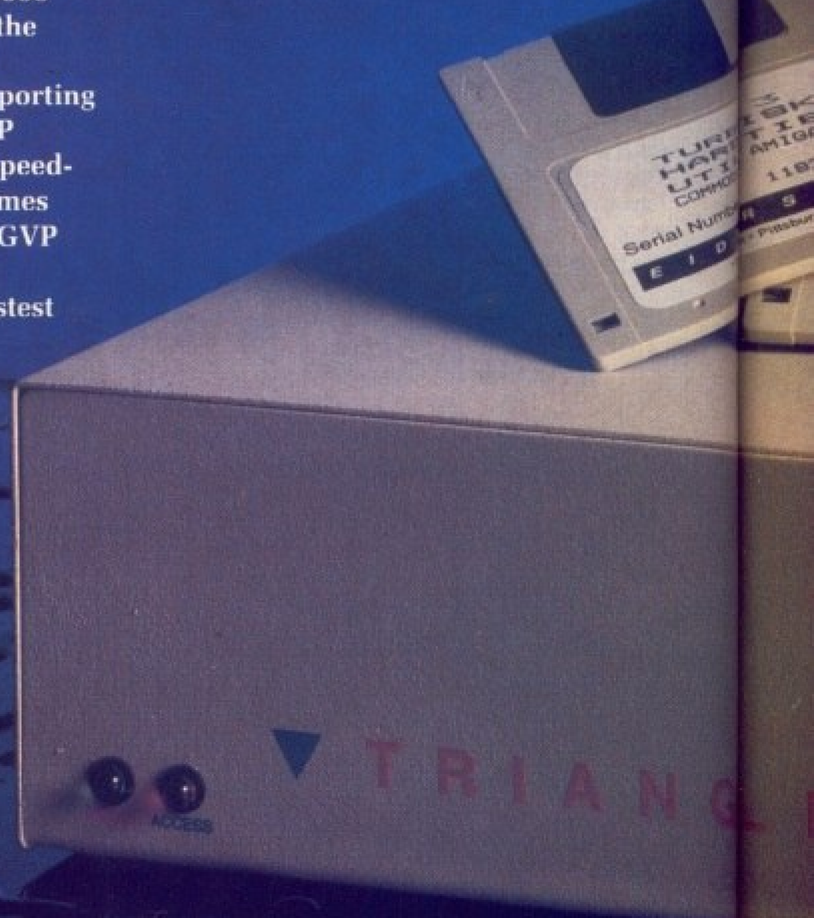
WHILE GVP has a philosophy that "the user who buys cheap buys twice", its hard drives are not horrendously expensive and the company has now sold over 8,000 of them, mostly in the form of A2000 hardcards – an interface with the drive bolted to the card.

Power Computing will be importing some of the very advanced GVP products including the 68030 speed-up card which runs 10 to 15 times faster than a standard Amiga. GVP really knows what it is doing.

While the Quantum is the fastest drive under £1,000 the GVP interface cannot use Direct Memory Access (DMA) to the Amiga. Real DMA, which the A590 has, reads data from the disc and plonks it straight into the Amiga's memory. This creates a bottleneck at top speeds but the advantages of having such a fast unit, or even one of the slower Miniscribe drives, outweigh this disadvantage because the basic drive Commodore use is so slow.

There is some DMA going on. Data is read from the drive and DMA'd into the interface card's own ram before being read conventionally by the computer. Commodore has been a pioneer in the area of DMA – it was one of the features offered by the ancient Commodore 700, the 8 bit business machine.

An area in which GVP has pioneered is auto-booting. The Power Computing Turbo 3 will autoboot



Bigger and better

On a clear disc you can seek forever. Simon Rockman laps up 100 megabytes of the fastest hard drive his Amiga 500 is likely to come across

with Kickstart 1.3 straight into a Fast File System partition. This is possible because it uses rigid disc blocks. No, I'm not sure what they are either, but it sounds very good.

The drive is connected to the interface using SCSI, the Small Computer System Interface. This makes for a faster connection than the ST506 or XT interfaces used with some drives and means that you can hook up to seven more drives on to the same interface.

NATURE abhors a vacuum, so hard drives rapidly fill. Keeping track of 100 meg of data rapidly becomes difficult, however neat you are with your directories. One solution is to divide the drive up into several partitions. These can be formatted individually and treated as separate AmigaDos devices.

There is a trade-off against this flexibility as each partition uses about 30k of the computer's ram. With an 100 meg drive and four partitions this eats into user memory.

The card has room for 2 meg of fast ram, although the difference between running in standard chip ram is barely noticeable. There will be a trend towards expanding Amigas beyond a megabyte when 1 meg Agnuses become available.

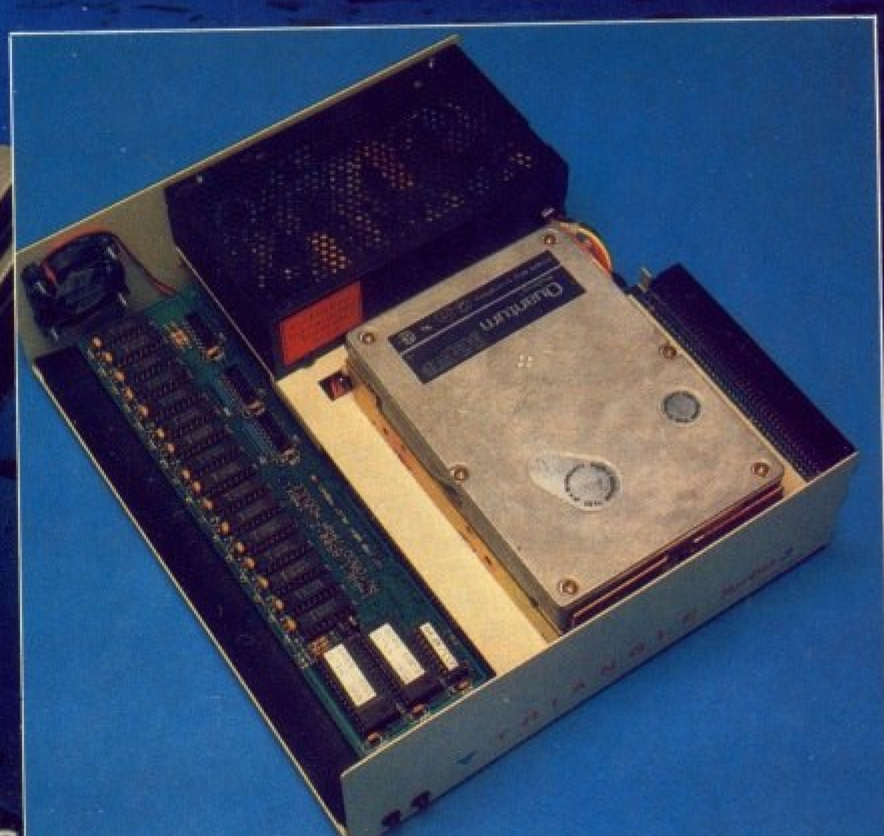
These chips are really useful for expanding the size of shapes and animations in art programs but have gained this space at the expense of non-chip ram. It turns the memory in the A501 expansion into chip ram. By adding fast memory you give programs more elbow room.

With lots of ram a hard drive rapidly becomes very hot. The Turbo 3 has plenty of room inside – a floppy drive can be put into the case if needed – but I'd have some real reservations about the reliability if it gets very hot outside. I have my Amiga set up in a shaded bay window, so if it gets hot I can open both windows and keep it cool. Sometimes I wear my shades and I look cool, too.

When a drive gets too hot it will give read errors. Save whatever you are doing, to floppy if necessary, and switch off. Let everything cool down. Don't put it into the fridge if it is very hot, magnetism is destroyed by rapid temperature changes, although a spell in the cooler might be a good idea before a long session at the keyboard. The worst reaction to a disc error message is to re-format the whole thing. While this is the sensible thing to do with a genuinely faulty disc, it will not do you any good with a hot drive. When the room cools down you will get more errors and lose all your data again.

To combat the heat problem, Power Computing has put a fan into the box. This may reduce the heat, but increases the noise made by the unit, a problem exacerbated by the sonorous properties of the metal case. Users who are never satisfied with what the manufacturer supplies may ►





like to fit a thermostatic switch so the fan only comes on when needed.

I'd like to leave my hard drive on the whole time, I do with the A2000 in the *Amiga Computing* office, but since I sleep within earshot of my A500 the combined noise of the fan and drive is too much.

It is good practice to leave hard drives on. The amount of wear caused by switching it on and off when the motor has to get a metal disc spinning from rest to many hundreds of rpm far exceeds the amount of wear the drive will suffer from if it is just left on. Of course if you aren't going to be using the machine for a while (What, you don't take your Amiga on holiday?), then it is best to switch it all off.

Documentation supplied with the Turbo 3 is light, easy reading. One desktop published manual covers all flavours of Amiga and ST hard drives. Suitable icons allow the reader to sort the wheat from the chaff in this respect, but the distressingly thin paperwork suffers from a lack of pictures.

NICHE marketing is Power's forte. While it used to sell a huge range of hard drives, the advent of some cheap, low-end systems has led the company to specialise in what it is good at. The best possible price/performance ratio, concentrating on the system reviewed here and a slightly slower 48 meg drive for £499 excluding the memory.

As a package, the Power Computing Turbo 3 is brilliant. It may not be particularly pretty to look at but the only complaint I really have is that Power Computing wants it back; or perhaps that is a symptom of my disquiet. At £999 for the drive and £249 for the autoboot board and ram this is no impulse buy. The ram price is quite good when you look at what the raw chips cost and it may well fall soon, but whatever happens you aren't going to see any change from £1,000, which puts it out of the home user's league.

REPORT CARD

Turbo 3 Hard drive
Power Computing 0214 273000
£1219.91

EASE OF USE..........
Simple plug in and go. Adding ram or auto boot needs better documentation or dealer help.

SOFTWARE............
High standards of compatibility on the card are supplemented by the gimmicky inclusion of a 16 colour workbench using Icon paint.

SPEED......................
Incredibly fast. This is what you are paying for. You would have to spend a great deal more for a drive to outstrip a Quantum.

VALUE.....................
How many users can afford such speed. For most, the A590 is a better buy at half the price, albeit with a quarter of the capacity.

OVERALL *86%*

A truly desirable hard drive. If you use an Amiga for work it will increase your productivity. Games programmers please form an orderly queue.

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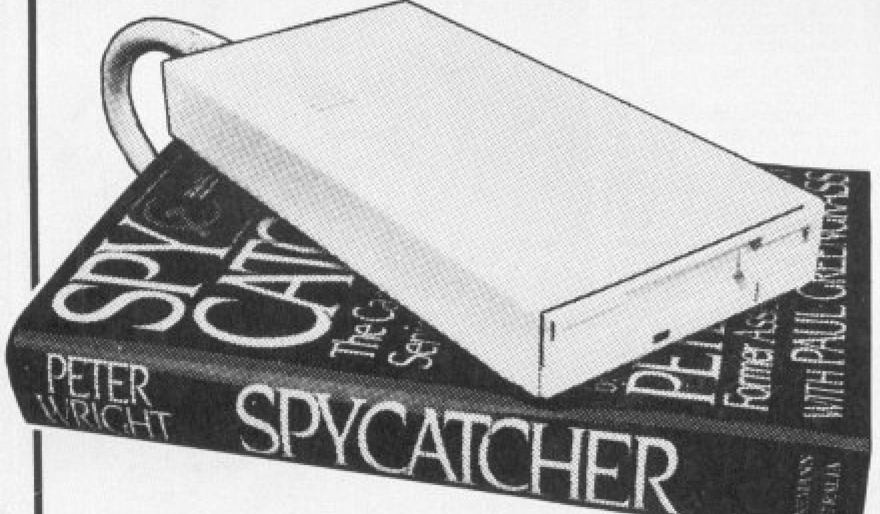
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***Myth* was rated at 90% by Keith Campbell of Commodore User.**
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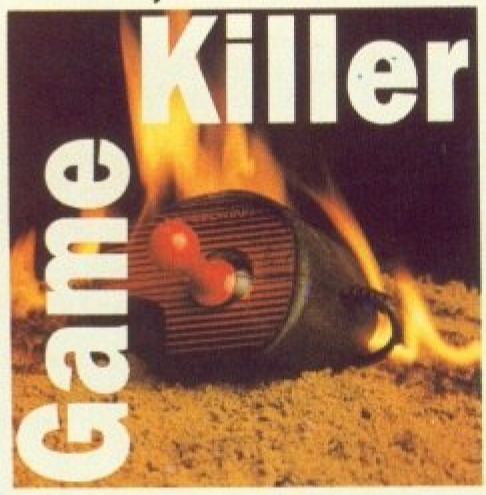
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Landscapes of the mind



Max Tennant takes on the Japanese empire and wins an ego so big that he thinks he rules the universe

PLAYING God feels good. That's what has made Populous the best selling Amiga game ever. Never shy of a Good Thing, the lads from Bullfrog have a couple of sequels up their sleeves. Check out future review pages, but in the meantime there are more landscapes than the mind can comfortably handle to be dominated in the original.

Someone with an incredibly large mind is Mark Otway, and has put together a list which will help you on your way to becoming a less minor deity. Type in these passwords to get to later levels:

1 Hurtoutord	80 Badgoond
3 Timuslug	85 Corqazme
4 Caldiehill	90 Verytory
5 Scoquemet	95 Douolow
6 Swaver	99 Timqazal
8 Eoaozord	103 Killsodpal
11 Nimihill	108 Bilogojob
15 Alpoutond	112 Badkopout
19 Bugqueend	114 Hobepil
24 Lowinggick	118 Binypert
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34 Jostme	133 Scooxlug
35 Timpeold	134 Swaeahill
38 Swaingpal	139 Nimdicon
42 Morhippil	145 Immsodond
45 Ringbpal	150 Binqueme
47 Alplopout	155 Mininghole
49 Sadmpt	161 Hurtaick
55 Mingbdon	166 Swadeboy
59 Doupebar	172 Bilaspil
70 Swahipmet	178 Hobquet
75 Nimlopill	

Sushitsune is the character you want to play in Lords of the Rising Sun if you want to get to grips with the strategy side of the game, as Andrew McGarrigle found out.

Playing Yoritomo needs some arcade skills which are best left until later on. To start with, under no circumstances must you try to take the centre, west or the two islands off Japan.

Make this mistake and it will be very difficult to get anywhere within the game. Concentrate on the Eastern castles first, as they fall particularly easily at the beginning.

You will then need to recruit more men, so try attacking the White Ronin with an army at full strength. This may intimidate him into joining forces with you. Don't attack if he wants to pass unhindered, he is no real threat just yet.

While you have been gathering strength in the East your brother Yoritomo has been causing havoc around central Japan. Take a rest at one of the castles and then, with high levels of men and health, take your brother on in battle.

If he is killed you will inherit his lands and generals. Even if you lose the battle it is worth fighting on.

WITH Yoritomo's lands under your command you can start on the rest of Japan. Before attacking castles check your siege skills, transferring skills with other generals if necessary. Similarly you should obtain sword skills for land battles and bow skills for defending castles.

Remember that there is safety in numbers, so if you manage to get five or six generals it will be a big advantage to pair them off.

When you have taken the mainland make a couple of visits to the Emperor at Koyoto. He will first give you the sacred scroll and then the sacred sword, but be careful – keep and eye on the encounter screen.

Enemies know they are under threat from you and your armies so they will send Ninjas to try and waste you. When you see a message press the left



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mouse button as quickly as possible. With a bit of luck the offending general will commit seppuku.

Providing you survive the ninja attacks, the next task is to take the remaining two islands and the last four castles. This will stop your enemies from re-arming when they retreat. As an enemy takes to the water to flee you will be waiting for them at whichever one of the islands they choose to seek refuge.

With Japan laid bare in front of you take the last castle and with it the title of Shogun.



HAVING just completed a roller coaster tour of America, Justin Garvinovic is back at his copy of DevPac knocking out pokes for the toughest games. This month it is Forgotten Worlds.

Type the program into AmigaBasic and save it to disc. Then put the Forgotten Worlds into DF0: and run the Basic program.

You will get a disc error, ignore it and everything will be just tickerty-boo. Tight for time and space this month, so we'll have to close now. Just time to say that if you have some tips you can win yourself one of the mysterious jiffy bags which litter the *Amiga Computing* office floor.

Each bag contains a superb game and a Konix speedking joystick. Send your tips, on disc if possible, to MTH, Amiga Computing, North House 78-84 Ongar Road, Brentwood, Essex, CM15 9BG.

```
REM INFINITE ENERGY FOR
REM 'FORGOTTEN WORLDS'
REM COPYRIGHT 1989 BY JUSTIN G.
REM FOR AMIGA COMPUTING.
tot=Ø
FOR n=327680& TO 327826& STEP 2
READ a$
a=VAL("&h"+a$)
tot=tot+a
POKEW n,a:POKEW (n+148),Ø
NEXT n
IF tot=583549& THEN GOTO section2
PRINT "there's an error in the data."
END
section2:
cheat=327680&
CALL cheat
DATA 61ØØ,ØØ4A,337C,ØØØ2,ØØ1C,42A9
DATA ØØ2C,237C,ØØØØ,Ø4ØØ,ØØ24,4BF9
DATA ØØØ3,ØØØØ,234D,ØØ28,4EAE,FE38
DATA 4CFA,ØØFF,ØØ16,48F9,ØØFF,ØØØ6
DATA A3ØØ,2B7C,ØØØ6,A3ØØ,ØØC6,4EED
DATA ØØØC,33FC,4E75,ØØØ6,A9DA,4EF9
DATA ØØØ6,A4ØØ,2C79,ØØØØ,ØØØ4,93C9
DATA 4EAE,FEDA,45FA,ØØ9C,248Ø,43FA
DATA ØØ86,4EAE,FE9E,43FA,ØØ2E,428Ø
DATA 4281,41FA,ØØ14,4EAE,FE44,43FA
DATA ØØ1E,45FA,ØØ6A,234A,ØØØE,4E75
DATA 7472,6163,6B64,6973,6B2E,6465
DATA 7669,6365
```

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AMIGA Letters

Colour disappointment

FOLLOWING your report on the Citizen HQP-40 I bought one for use with my Amiga 2000 system and PC bridgeboard. My problem is that despite what the dealer told me it does not appear to be operating in 24 pin mode or formatting pages properly with all my software.

Running off Workbench 1.3 the machine only operates in EpsonX emulation and will not reproduce the wysiwyg displays of Excellence!, Pro. Page, Photolab and other programs. Selection of the EpsonQ 24 pin driver makes the system crash. The same problems occur with PC software. No software seems to drive the HQP-40 directly, and all emulations have minor to diabolical bugs.

The paper handling on my machine is diabolical, with consequent disastrous colour output. My time is too limited to write my own printer drivers and the advertising and review say this is unnecessary.

S. Ian Marriott,
Dunstable, Beds.

Commodore does not know about the HQP-40 and Citizen asked if the "Omega" was a kind of PC. However, we suspect the problem would be quite simply resolved with a new copy of the EpsonQ printer driver.

Take your Workbench enhancer pack back to the dealer and get a new extras disc. The paper handling on our very hardworking HQP-40 is fine. It is often left doing very long print runs and we have the confidence to leave it unattended.

There may be some problems with alignment on your machine which Citizen (0895 72621) should be able to fix when you have the new driver. Impact printers, however many pins they have, will always produce muddy results.

Workbench bug

WHILE I was setting up a disc to work the way I wanted I had a strange bug. When I copied files together the .INFO files worked and appeared as icons under Workbench, but when I copied the files separately the .INFO files didn't work. Is there something else on the disc I need to copy?

Ted Decker,
Havering.

This is a great bug unmasked by Mark Tilley of Arnor. The .info file must be typed in lower case. So if you renamed fred.info to fred.INFO the file will stop working.

Best US buys

SCANNING some American magazines I have been struck by the incredibly low hardware and software prices enjoyed by our colonial cousins.

I am planning to go to the States later this year and it occurred to me that this might give me a chance to buy some Amiga goodies while over there.

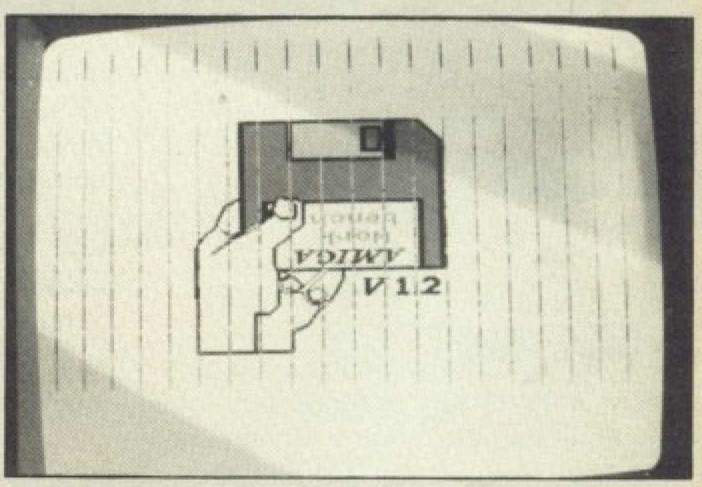
I realise that my choice will be limited by the fact that everything over there runs on 110 volts and displays on NTSC monitors and TVs, and that warranty could present problems – but surely there is *something* I could pick up over there to "beat the system".

Richard Whiting,
Sheffield.

Most, but not all software will work. A program has to be deliberately "fixed" so that it will not work, this being usually done for copyright reasons. Examples are Dragons Lair and Zoetrope. If you want to check

▶

Oh dear!



WHILE playing with my computer lots of vertical lines appeared on the screen, like the one in the photo. Thinking that it was a virus I switched off and turned back on a few minutes later. Unfortunately the lines remained. Even when I inserted a disc the lines stayed. The drive whirred and stopped but it didn't read the disc.

Sometimes the whole screen is blue with the black outline of the disc and hand. Sometimes the disc is white. Even if I leave the computer switched off for several days the fault remains.

Chi Chung Wong,
Hampton, Middx

Your fault is a blown custom chip – we killed two Amigas which exhibited this fault. Your machine will have to be repaired; either take it back to the place where you bought it or contact DPCE, Commodore's main service centre on 0952 290488.

The problem is usually caused by plugging in and unplugging peripherals when the power is on. If your machine is not covered by the warranty the repair is likely to be expensive.

up call the software house while you are over there.

Hardware is usually OK, things like processor accelerators and ram expansions will work perfectly. There are some great "toys" you can't get here like the Boing! optical mouse and the Haitec 3D glasses.

A good buy might be a SCSI hard drive interface, getting the actual drive and PSU in the UK.

You should check out the prices here first. Most games are more expensive in the US.

The need for speed

FOR some time I have been considering buying the 68020 Midget Racer Board for my A500, but first I was wondering if you could answer a few questions. I'd like to know what 32 bit ram is, and if the 68020 needs it to access the full power of the chip and how much does it cost?

Would the chip work faster with static ram? If so could I plug S-ram into the computer or a Starboard 2? Is there anyone who produces ram expansion boards for the A500 that can accept 1 megabit rams and would these fit into a Starboard 2?

Finally, at a later date could I remove the 68020 and plug in a 68030 or 68040 straight into its socket?

Charles Frank,
Shropshire.

The 68020 is a 32 bit processor. However the Amiga is only a 16 bit computer. This means that for every 32 bit number the Amiga wants to work with it has to read two 16 bit numbers.

On the big CSA 68020 cards for the Amiga 2000 the ram is connected directly to the processor so it does not have to go through the 16 bit bottleneck caused by the Amiga's 16 bitness. It is very much faster, nearly twice the speed, but it is also very much more than twice as expensive.

The CSA board which Amiga Computing *reviewed in August 1988 costs £5,000 and is not available for the A500.*

The story is similar with static ram. If the memory is directly connected to the processor it can run faster, but using a normal memory expansion it is not possible to use static ram, and would provide no advantage other than low power consumption.

The saving in electricity bills would be insignificant compared to the cost of expensive static ram.

The MicroMegs expansion from MAST (077-082 234) uses 1 megabit ram chips. It plugs straight into the A500 (you don't need a Starboard), and costs £99.95 with the ram on board.

Upgrading from a 68020 to a 68030 is not too difficult technically, thanks to some brilliant work by Motorola. However, it will be an expensive move. And first production of the 68040 is so far off it is unlikely to be a realistic proposition.

AMIGA Letters

Dutch courage

CRAIG Thornton's suggestion that copying software is a criminal offence is ridiculous. In the Netherlands I am in high school and exchange software with friends so we don't have to pay for it. We swap programs like WordPerfect. I had to save for a long time to buy my Amiga and so can't afford a program like that.

The copying of programs is as much accepted as copying music cassettes *if* you don't make money out of it. If you sell programs for money then you are a criminal. What you suggest makes thousands of computer-freaks criminals.

Tatjana Varen Kamps,
Altveer,
The Netherlands.

People like you don't deserve to own computers.

BBC Blues

THERE does not seem to be much educational software around for the Amiga. My sons are of primary school age and are having great fun with all the games, but I would like them to have some educational programs as well. I am very pleased with Fun School 2 but there doesn't seem to be much else.

I understand I could use software for the BBC Micro if I have the BBC Emulator. How would I use this? Would I have to buy a second disc drive for the larger 5.25in discs or could I use the BBC Compact discs in the Amiga's drive?

B. Bates,
Shepperton, Middx.

Things are bleaker than you think. To get a program from a BBC disc to an Amiga you need a BBC Micro which has to be linked to the Amiga with a serial lead.

There is no software for the Amiga which will read any of the multitude of BBC disc formats. This is because the BBC Emulator is aimed at schools which already have BBC Micros.

You might be able to arrange to borrow a BBC and transfer the software to Amiga discs, but buy carefully. Even the BBC is not flush with good educational software.

A better bet might be to look at the teaching applications opened up by some of the better "real" software. Children can learn a lot from things like Deluxe Paint, Scrabble (although we suspect that is too advanced for your children) and things like Notepad.

Datel Delays

WHEN a local supplier told me that it would take him a week to order an eprom blower for my Amiga I called Datel Electronics. I was told that the units were in stock and could be despatched immediately. So I ordered one on my credit card.

When the eprom blower had not arrived after a week I called them to be told that there had been "a delay" but "all orders had now been sent out". A week later I called to be told that there were problems and the eprom blowers were not in stock.

In the meantime my local dealer had received his stock and so I cancelled my order, and was told that my Access account would be credited. They should not have debited my account in the first place.

This is not the first problem I have had with Datel, although I won't be giving them the opportunity to cause any more.

Steve Rackley,
Camberley, Surrey.

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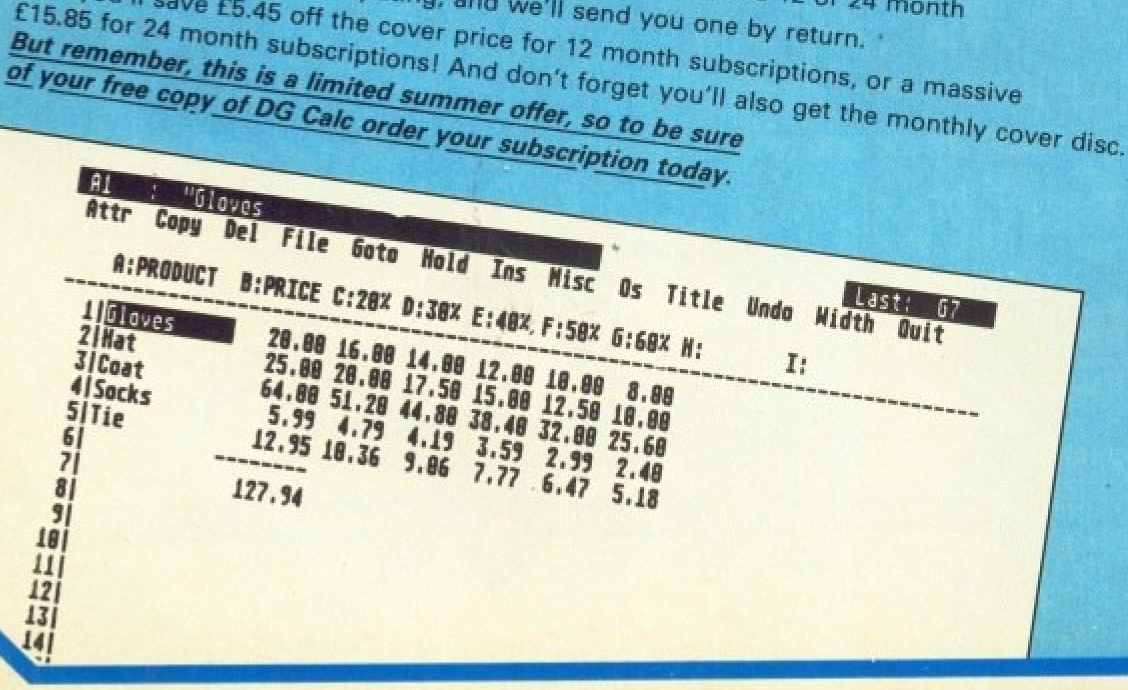
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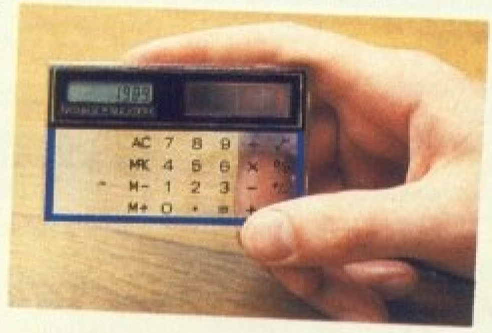
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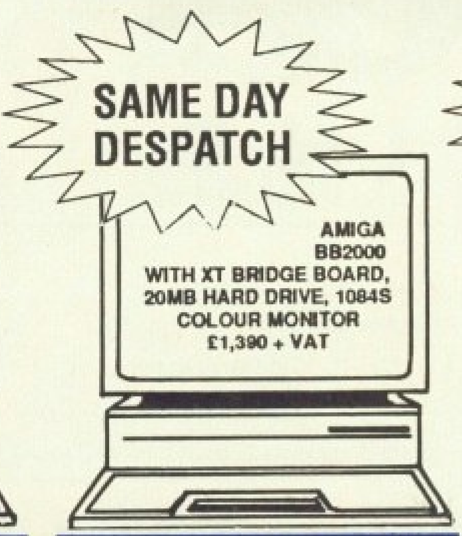
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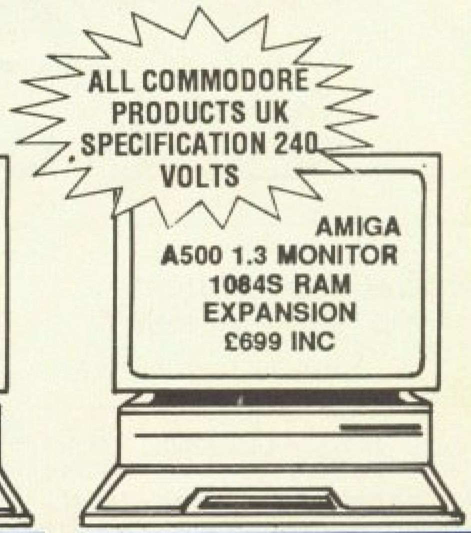
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